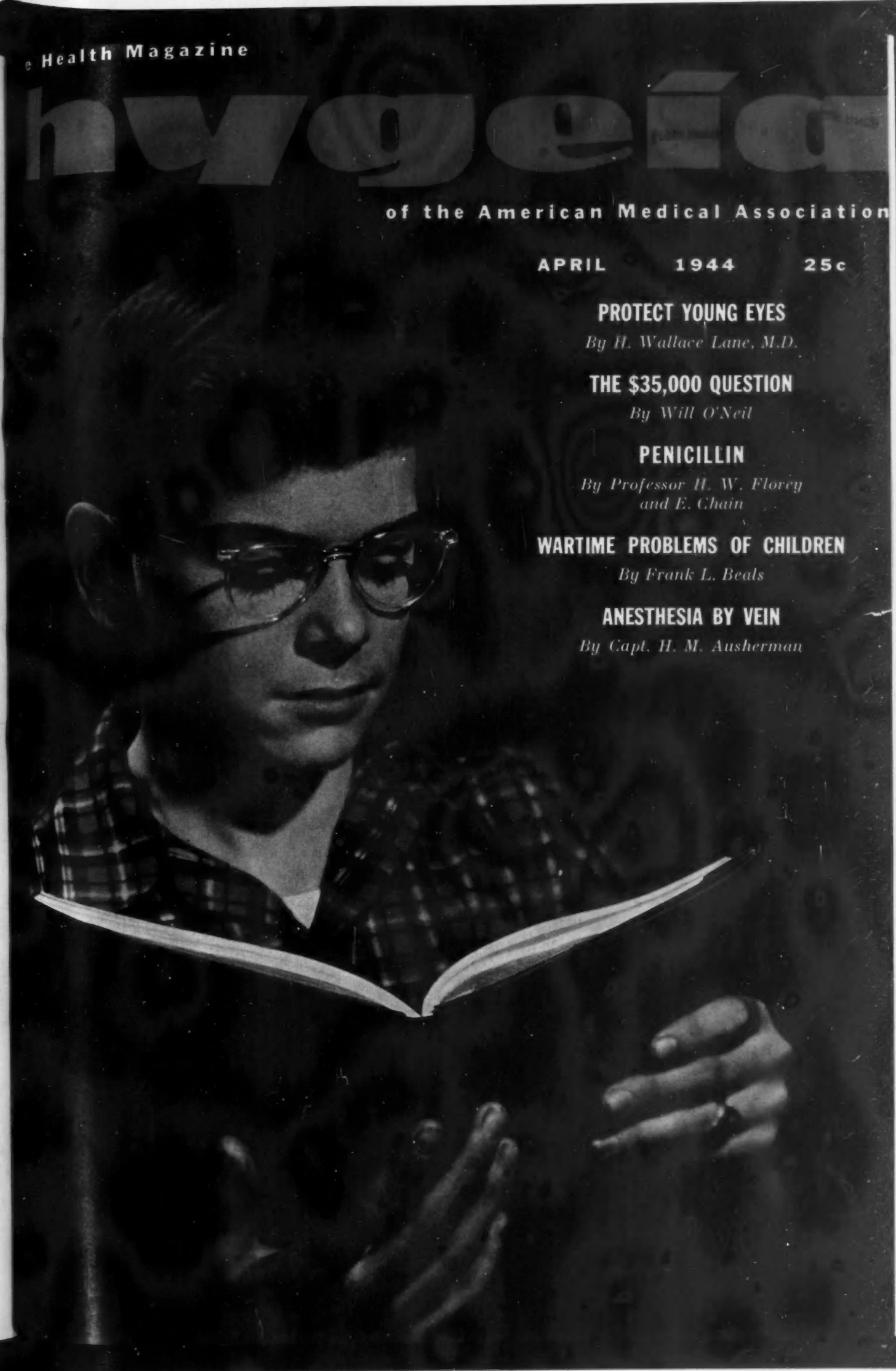
e Health Magazine

hygeia

of the American Medical Association

APRIL 1944 25c



PROTECT YOUNG EYES

By H. Wallace Lane, M.D.

THE $35,000 QUESTION

By Will O'Neil

PENICILLIN

By Professor H. W. Florey and E. Chain

WARTIME PROBLEMS OF CHILDREN

By Frank L. Beals

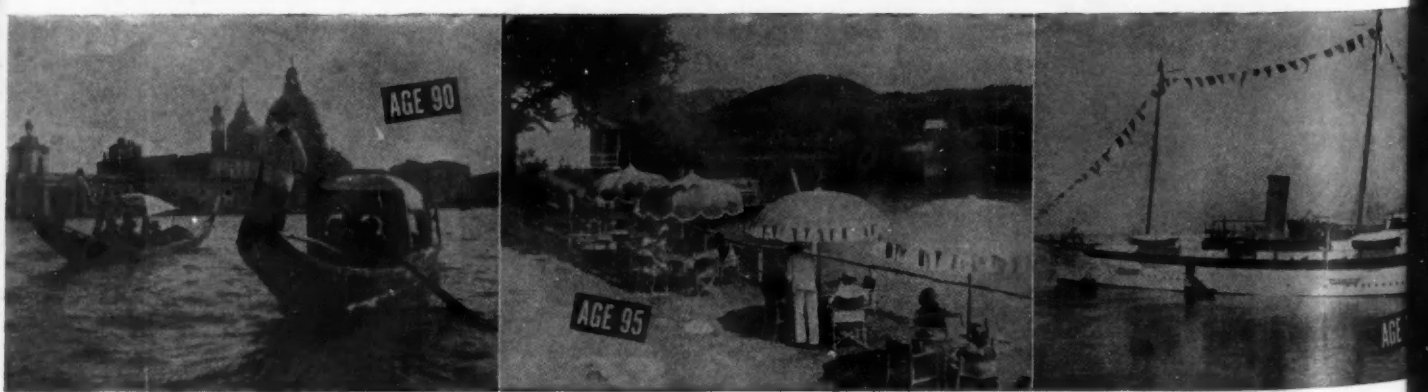
ANESTHESIA BY VEIN

By Capt. H. M. Ausherman

. . . At age 45, your child's "Luxury Fund" described on the opposite page amounts to $21,000. He promptly buys himself the latest home heating-cooling-air-conditioning system for $1,500. At age 50, he thinks he'd like to have a television set, so he buys one for $500. Five years later, he feels the need for a summer home, price $5,000. . . .

. . . At age 60, a helicopter's the thing, only $1,500. (He still has $21,000 left, as C.I. — Compound Interest — has been working for him right along.) Age 65 is just the right time for a hunting lodge, price reduced to $1,000. At age 70, "I've never seen Niagara Falls," he says to himself, promptly allocating $500 for the experience. . . . .

. . . Age 75 finds our hero winging his way to Rio de Janeiro, this journey taking away only $1,000 from his Luxury Fund. He can also well afford a trip to England for $1,000 at age 80. After that he still has $33,000 left, thanks to Compound Interest and You. He spends his 85th birthday — and another $1,000 — seeing the sights of Paris. . . .



. . . Enjoying Venice at four-score-and-ten is easy, if one has the time and a little extra cash to spare (only $1,000). At 95 he decides to go a little easy so he takes a rest at Lake Placid — why not? Only $500. At the turn of his century, your child still has $54,511.75 left and is a bit tired looking for luxuries, and besides, he isn't sure how much longer he's going to keep healthy. A girl friend tells him about a big government auction sale, which they attend and she talks him into buying a couple of rebuilt yachts for his fifty-odd thousand, and they lived happily ever after.

So the moral of this tall story is.

How your child can

GO PLACES AND DO THINGS AFTER 45 . . .

ON E BONDS

and still have oodles of spending money!

1. From the time your child is born until his 25th birthday, buy him an $18.75 E Bond each month.
2. Let him continue this fine habit you started, until his 45th birthday.
3. No more capital need be added to this "Luxury Fund."
4. As each E bond matures in 10 years at $25.00, simply reinvest it in more E Bonds—

COMPOUND INTEREST DOES THE REST

and enables your child to do all the things—travel, etc.—that you wished you could do after you were 45.

. . . your child, thanks to you and Compound Interest, had more fun after 45 than you could afford to give him when he was a small child. Aren't you glad?

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FORECAST

BREAST MILK BANK

By Richard E. Craiglow

Most babies thrive on breast milk—and a few babies have to have it to survive and grow. So now "milk banks" have been developed at a number of hospitals and clinics. Mr. Craiglow describes these new life-saving depositories.

●

EMOTIONAL DEVELOPMENT OF CHILDREN

By C. W. Wyckoff, M.D.

Feelings of love and contentment, hate, fear and resentment are all inherent in babies. Parents mustn't be oversolicitous—but they must recognize the baby's emotions and guide their development in proper channels.

●

THE BEATEN CHILD

By Austin E. Smith, M.D.

In the past few months, the newspapers have featured several stories of cruelty to children. Dr. Smith tells what is behind these sordid tales, and what is ahead for these unfortunate youngsters.

●

STUTTERING

By David Belgum

Operating with unique methods based on sound psychologic principles, a clinic at the University of Minnesota for stutterers and others with speech difficulties has been getting amazing results. Here is its story—by a former patient.

●

ALSO COMING IN HYGEIA: Up to date articles on exercise, vaccination, malaria, care of the feet, iodine in nutrition, school health and other timely health topics.

hygeia

THE HEALTH MAGAZINE

535 N. DEARBORN ST., CHICAGO 10, ILL.

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APRIL

COVER.....Carlson—J. C. Redlich Studios

PLANNING FOR MEDICAL SERVICE—An Editorial by Morris Fishbein..... 253

PROTECT YOUNG EYES!.....H. Wallace Lane, M.D. 254

INDUSTRIAL HYGIENE GOES TO WAR.....Faye Henle 256

THE $35,000 QUESTION.....Will O'Neil 258

HELP FOR THE BLINDED SOLDIER.....Gabriel Farrell, D.D. 259

ANESTHESIA BY VEIN.....Capt. H. M. Ausherman, M.D. 261

WHAT GOES ON IN A MORON'S MIND.....Lieut. Daniel H. Harris, Ph.D. 262

NEUROSURGERY AT FITZSIMONS HOSPITAL.....Grace Igo Hall 264

WARTIME PROBLEMS OF CHILDREN.....Frank L. Beals 268

INFANCY AND EARLY CHILDHOOD.....C. W. Wyckoff, M.D. 270

FIGHTING DEATH ON WINGS.....Berton Braley 272

THE DEVELOPMENT OF PENICILLIN IN MEDICINE.....Prof. H. W. Florey and E. Chain 274

X-RAY TECHNICIANS.....M. G. Westmoreland, M.D. 276

LEG EXERCISES.....W.A.C. Manual of Physical Training 278

FOODS AND NUTRITION

Meat Substitutes.....Esther Heineman 284

QUESTIONS AND ANSWERS..... 304

CHILD CARE

Speech Is Important.....Calvin T. Ryan 306

BOOKS ON HEALTH..... 314

MEDICAL NEWS..... 320

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MIRACLES OF THE BATTLEFRONT

HIDDEN HOSPITALS SAVE LIVES AT BATTLEFRONT

It's midnight not far behind the battleline. In the darkness, ten tons of equipment are unloaded. A battered farmhouse is transformed into a usable hospital. No light escapes through the masked windows.

Quickly an operating room is set up . . . twelve officer doctors go to work.

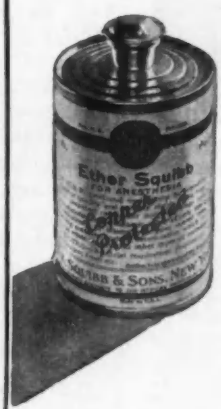
To the tune of artillery fire, anesthetists and surgeons calmly perform their miracles. When the battleline moves ahead, the surgeons pack up and follow.

Lt. General Mark W. Clark, in commending the "wonderfully fine work" performed by the medical units of the Fifth Army after the landing at Salerno, said, "The first hospital opened within three to five miles of the front lines. The next hospital began to function the following day still closer and under the most difficult conditions.

"Many of those who survived would never have reached a hospital alive had the hospitals been located at normal distance from the front."

Nimble fingers of skilled surgeons perform emergency operations that can't wait until the patient reaches an evacuation hospital in the rear. Fresh sheets, bandages, surgical instruments, sterilizers, ether, and medical supplies appear like magic from portable chests. An operating room is created in the midst of battle.

Transfusions can't wait. A rifle holds the lifegiving fluid, administered by a Company Aid man trained to work in the thick of battle under the supervision of a medical officer. A new discovery, made from the blood you donate, is *human serum albumin*, more compact than dried blood plasma, less affected by heat than liquid plasma, and used by paratroopers and landing parties.



SQUIBB ETHER—the most widely used anesthetic ether in peacetime—is now used in Army and Navy hospitals the world over. Sulfa drugs, penicillin, human serum albumin, vaccines, biologicals, and the new Syrettes* (tiny self-contained hypodermic units made by Squibb) are flowing in huge quantities from Squibb to our armed forces on every battlefront.

From the lesson of this war, Squibb will help America's physicians to build a healthier peacetime world.

*Reg. U. S. Pat. Off.

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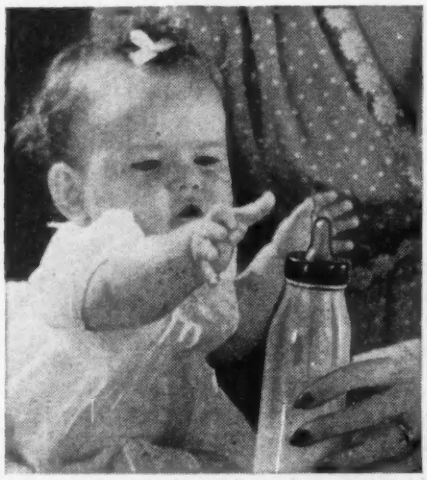

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WHO'S WHO IN hygeia

Known to the newspaper and magazine reading public for his light verse, which has been appearing everywhere for the past twenty-five years, and for the hundreds of articles, short stories and serials he has written during a long literary career, BERTON BRALEY is famed among writers for what Westbrook Pegler has called "the most remarkable reporting feat in the history of sports"—a versified story of every game in three World's Series, wired to his newspaper syndicate from the press box. Braley, whose first verses were published when he was a 17 year old high school student in Madison, Wis., and who estimates that he has written and sold more than 10,000 pieces of verse since that time, has been a foreign correspondent for American newspapers in war and peace; he has written twenty-odd books under his own name and "ghosted" half a dozen more. After Pearl Harbor, he went to Washington as a writer for the Office of the Coordinator of Inter-American Affairs, but recently he resigned from this task to take a job in civilian life which he thinks is even more useful—combating inflation. "Fighting Death on Wings," on page 272 of this issue of HYGEIA, is Braley's article describing the work of the health and sanitation division of the Coordinator's Office. It isn't in verse, but it makes pretty exciting reading anyway.

LIEUT. DANIEL HARRIS, U.S.N.R., claims the distinction of being the only American who visited Soviet Russia in the 1920's without writing a book about it. He achieved this standing when he took a trip around the world following his graduation from Columbia University in 1927. Other countries he visited and didn't write about included Britain, Germany, China and Japan. He regards his achievement in the case of Russia as the most noteworthy, however, because he stayed there for five weeks—ample time, according to the prevailing practice, to gather material for a full-sized book, with enough left over to float a series of lectures on the woman's club and parent-teacher circuits.

Instead, Harris returned to Columbia to take his M.A. and Ph.D. degrees in psychology and then became an instructor at Lehigh University, where his habit of going hatless, coupled with the fact that he was still younger than a sizable proportion of the student body, made him famous as the only member of the faculty who was commonly mistaken for an undergraduate. Since 1935, Lieutenant Harris has been doing clinical and guidance work in psychology for a number of institutions and organizations, including CCC camps, schools and colleges, penitentiaries and, most recently, Uncle Sam. Over the years, he has accumulated the knowledge which makes him a demon judge for the Navy of "What Goes on in a Moron's Mind?" For the answers, turn to page 262.

GABRIEL FARRELL, D.D. (author of "Help for the Blinded Soldier," on page 259, is director of the Perkins Institution and Massachusetts School for the Blind at Watertown, Mass., an institution which has gained world-wide prestige during its one hundred and thirteen years of service to the blind. Dr. Farrell, who is the Institution's fourth director, is also a lecturer in the graduate school of education of Harvard University. A graduate of Dartmouth College, Dr. Farrell took his theological training at the Episcopal Theological School in Cambridge, Mass. Prior to his appointment as head of Perkins Institution, he was engaged in educational work for the Episcopal Church. Perkins Institution, however, has no religious affiliations

(Continued on page 248)

Your Doctor's Medical Strategy

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To care for you in an illness, your doctor needs to know more than the proper treatment to prescribe.

He knows not only how to time the treatment according to the stage of the disease, but also how to temper it to the patient's physical condition and how to reduce the risk of complications. He uses the helpful effect which cheerful surroundings and pleasant contacts have on the patient's state of mind to assist the body's own forces in overcoming disease.

This skill in bringing every healing influence to his patient is as much a part of your doctor's ability as his training in surgery or his understanding of the use of drugs. It is another reason his counsel is so essential to you whenever you need medical care.

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Letters from Readers

Crusade

To the Editor:

We're reading on every hand of the good things coming after the war. Why not have HYGEIA do a little crusading for a better world?

American women have so many rights that they scarcely know where they properly belong, but motherhood is still their crowning glory and it will never be otherwise. But is there no way of enlightening women to be independent in the matter of dress? In Boston years ago my wife and I saw women wearing men's shoes. We still take off our hats to those women! At the time, we visited a shoe factory near Boston. The sample showroom had many strange patterns, and we were told that "women want shoes to fit their heads—not their feet!"

The tyranny of fashions and of the unenlightened mind is still very real. SAMUEL BAUMAN

Yucaipa, Calif.

Fit for Service

To the Editor:

My son is on Navy duty in the Pacific and our next child, a girl, is in the WAVES and happy to be able to do her bit. HYGEIA articles have certainly helped to keep them fit for service to their country. We prize our copies and usually keep them tucked away from these "magazine borrowers," as we can't afford to lose a single copy!

MRS. R. W. FEATHERS

Tacoma, Wash.

From the USO

To the Editor:

Wish to take this opportunity to let you know that we enjoy HYGEIA immensely. We have been receiving it here each month and do look forward to it. DICK BARNES

USO Director

St. Joseph, Mo.

Everybody Welcome!

To the Editor:

While waiting in my doctor's office for an appointment I read HYGEIA, and I was so impressed with the common sense and constructive information it gave readers that I want a subscription. Not knowing at the present time if nonprofessional persons are entitled to receive your magazine I am writing to inquire. JANE ALBRECHT

San Francisco, Calif.

HYGEIA is for you.—ED.

Here . . . is where your extra years are added

THESE years aren't on your calendar or birthday cake. They're in the wrinkles on your brow, in the crow's-feet 'round your eyes.

They're the years that eyestrain adds to your appearance!

For eyes change as you grow older. And modern living conditions, bright lights, extra work and reading, all make additional demands on your vision that your eyes, unaided, often cannot meet.

That's why squinting and frowning etch their telltale marks more deeply every year. Heed their warning—*"It's time to have your eyes examined!"*

Examination may reveal that your eyes need relief from over-brilliance, as thousands do . . . that your eyes would be more comfortable in Soft-Lite Lenses. These modern lenses are scientifically designed to filter glare, often mean the difference between "just seeing" and really effortless vision.

Why not make that appointment for an eye examination now?

Soft-Lite Lenses are prescription ground in single vision or bifocal forms. They are made by Bausch & Lomb, solely for the Soft-Lite Lens Company.

℞ Prescribed to make seeing more comfortable by absorbing over-brilliance. Slightly flesh-toned, less conspicuous, better looking.
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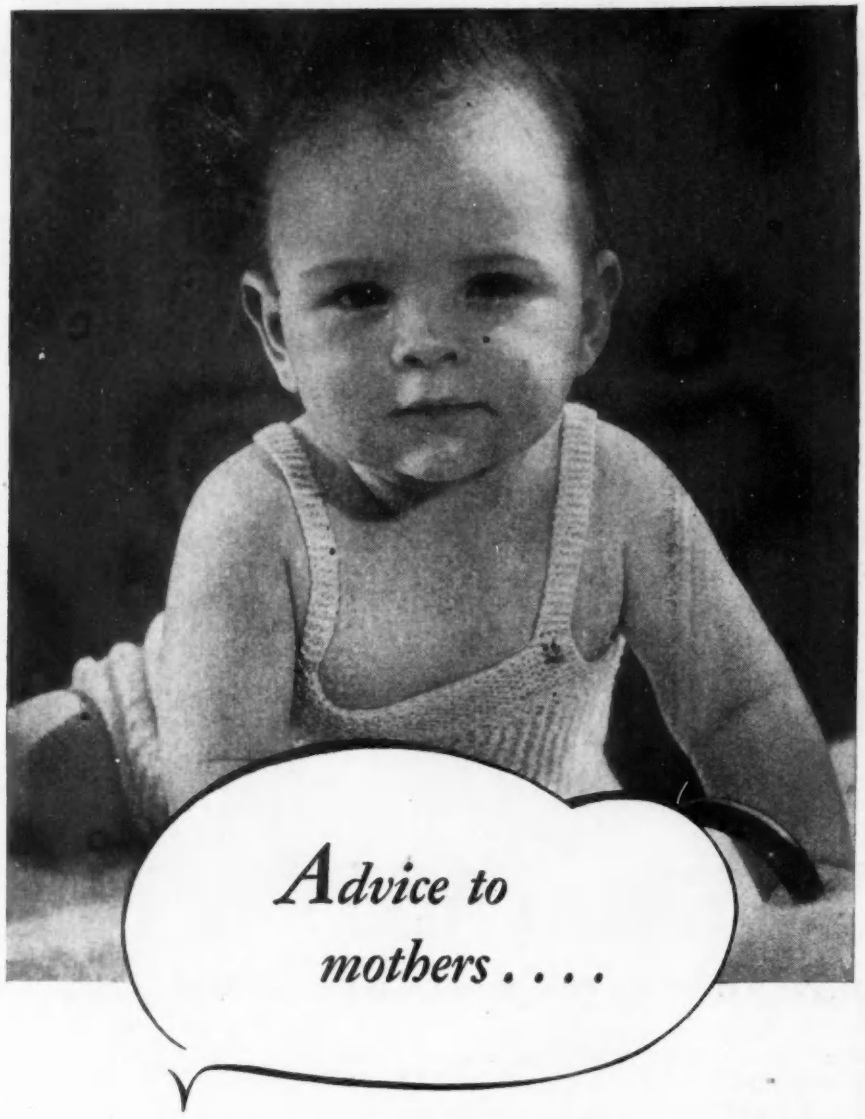
There is only one Soft-Lite—identified by this certificate

If there is delay in filling your prescription for Soft-Lite Lenses, please be patient. Skilled optical craftsmen who make and grind them are busy on war work too.



A baby's laugh is unpredictable but when a baby cries there is a definite reason. Chafed and irritated skin, a frequent source of discomfort to infants, may often be avoided by the use of 'Borofax'.

'Borofax' is a protective, water-resistant ointment that helps to counteract excessive drying of the skin and to relieve irritation caused by wet diapers. Apply after every change of diaper and following baby's daily bath.

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Fit at 72

To the Editor:

The steady application of reliable medical information I've acquired during past years has helped decidedly toward recovery of my health—at the age of 72. I have enjoyed reading HYGEIA and shall recommend it to my associates who may be in need of its valuable hygienic instructions.

Providence, R. I. E. S. BOUVIER

Nine Years More

To the Editor:

I was surprised to find that my subscription to HYGEIA has extended to nine years. However, as long as it is in the interests of prolonging my health, you can send it to me for nine years more.

J. F. MACENULTY
Port Washington, L. I.

Who's Who

(Continued from page 244)

and is entirely nondenominational in all its activities.

Dr. Farrell is a trustee and secretary of the American Foundation for the Blind and a member of the American Association of Instructors of the Blind and the American Association of Workers for the Blind. The last two groups he represents as chairman of a joint committee on national legislation; this work has kept him in close touch for several years with legislation and proposals looking toward the provision of benefits for blinded war veterans. That the efforts of Dr. Farrell and others interested in this useful and necessary work are bringing results is apparent in the program outlined in his article in this issue of HYGEIA.

CAPT. H. M. AUSHERMAN, Medical Corps, Army of the United States, is now chief of anesthesia and the operating section at Woodrow Wilson General Hospital, Staunton, Va. Captain Ausherman was graduated from Walla Walla College in 1931 and received his medical education at the College of Medical Evangelists in Los Angeles. Following graduation from medical school, Dr. Ausherman served a residency in anesthesiology at the University of Wisconsin and practiced his specialty in Tennessee for five years prior to entering the Army. In 1942, he was certified by the American Board of Anesthesiology. When Captain Ausherman writes about what wounded soldiers think of

"Is that Jim Carpenter...or...?"

YES, that's Jim, Bill's best friend, large as life and only ten feet away . . . but Bill doesn't give him a tumble. Not a snub, of course, but Bill's eyes are just out of focus.

Maybe he's nearsighted or suffers from astigmatism . . . and perhaps he doesn't even realize it.

How do you know whether or not *you* need Eye Glasses? There's a logical way to make certain. See your Eye Physician . . . if he says *yes*, depend on a *Guild Optician* for the correct interpretation of your prescription. He enjoys your doctor's confidence . . . and has his hearty recommendation.

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SUTHERLAND & PARKINS
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Winnipeg, Manitoba
RAMSAY, ROBERT S.

Ask any Guild Optician for the names of Eye Physicians in your Vicinity

"Anesthesia by Vein" (see page 261), he's speaking as more than a skilled medical anesthetist: Before he returned to his present post in this country, he served with Army surgical units throughout the campaign in North Africa.

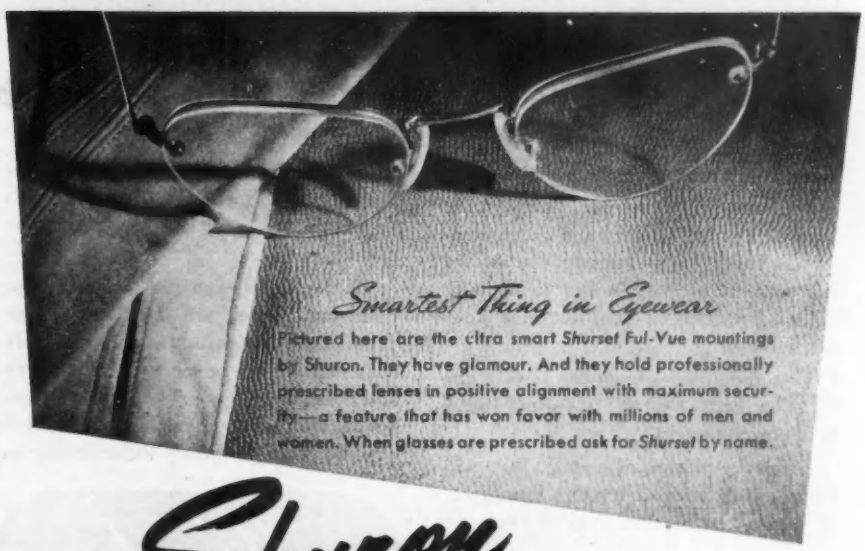
HELP FOR HOME CANNERS

Last year, more than 24,000,000 victory gardeners and home canners put up an estimated total of *four billion containers* of canned foods, according to reports compiled by the United States Department of Agriculture. But, unfortunately, the Department also received many reports of large scale spoilage and accidents caused by the use of wrong canning methods or by improper handling of home canning equipment. To make 1944 a more successful year from the standpoint of home food preservation, the War Food Administration last winter held a national conference attended by representatives of the state extension services of the Department of Agriculture, vocational and educational supervisors and manufacturers of jars and other home canning utensils.

Among other important recommendations coming out of the conference, it was urged that the Department of Agriculture and appropriate state and private agencies continue and intensify research looking toward the perfection of safe, practical home canning methods which will yield products free from spoilage with maximum retention of nutritive values. Other recommendations had to do with details of specific canning methods and equipment and the education of the public.

It is expected that an even larger number of persons will be engaged in growing and preserving foods at home this year. Those who have plans for the home canning of fruits and vegetables during the coming season will save money and effort—and perhaps health or even life—by writing to the Bureau of Human Nutrition and Home Economics, Agricultural Research Administration, United States Department of Agriculture, Washington, D. C., for the list of free popular publications. Individuals may receive up to ten pamphlets free of charge, and teachers may get as many as 100 for distribution to students. Of particular interest to home canners this year will be the pamphlets on "Oven Drying," "Wartime Canning of Fruits and Vegetables" and "Pressure Canners."

A lonely heart is one thing. But there's another kind of loneliness that many people experience because of "visual isolation." As a result of subnormal vision, they go through life only half-seeing the world around them—passing friends unnoticed on the street, for instance. If your eyes need help, place your confidence in the professional man who has spent years in the study and practice of eye-care. He will prescribe the means for better vision.


Smartest Thing in Eyewear
Pictured here are the ultra smart Shurset Ful-Vue mountings by Shuron. They have glamour. And they hold professionally prescribed lenses in positive alignment with maximum security—a feature that has won favor with millions of men and women. When glasses are prescribed ask for Shurset by name.

Shuron
SMART EYEWEAR

The Lady who lives in the shade of the "Quaker Button Tree"

SHE is a proud, happy grandmother.

Fortunately, there are many more happy days left to her, and more comfort in those days—because the doctor has seen fit to sustain her tired body with a prescription that includes a remarkable drug.

This drug comes from the seed of the "Quaker Button Tree" of far-off India. It is strychnine.

A deadly poison, of course. But skilfully compounded by the druggist, strychnine becomes a giver of life.

THE MAN YOUR DOCTOR COUNTS ON

This is only one example of hundreds of potent drugs with which your druggist is familiar, of more than ten thousand intricate formulas that are at his fingertips, of countless skills that he has mastered.

All this knowledge and skill have not come easy. They are the fruit of four years of intensive study in college. Study that extends far beyond just chemistry and pharmacology . . . to physics, botany, biology, physiology, bacteriology, toxicology. Study culminating in a hard-won Bachelor of Science degree.

No wonder your druggist is trusted by your doctor. He is highly trained, dependable, makes no mistakes. He is essential to the health and welfare of your community and of our nation.

★ ★ ★

ONE OF A SERIES of messages promoting better understanding of the vital role played in your community by your druggist. Published by Wyeth's, Philadelphia, illustrated by Haddon Sundblom. Wyeth's have been pioneer pharmacists since 1860, relied upon by your physician and druggist for uncompromising quality, precision, and ethical standards in pharmaceuticals, biologicals, and nutritional products.

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YOU CAN COUNT ON
YOUR DRUGGIST—YOUR DOCTOR DOES!

Planning for Medical Service

—An Editorial by MORRIS FISHBEIN

IN ITS consideration of various plans for providing people with medical care, the American Medical Association, through its House of Delegates, which speaks for the organization in matters of policy, has emphasized that the quality of medical service is paramount. The conditions associated with the administration of medical service must be examined with relation to their effects on the quality and sufficiency of such service. In every governmental directed or compulsory system of medical service the quality of the service is inevitably diminished in the attempt to decrease costs, particularly when the added burden of governmental administration is placed on the funds available for medical care.

One of the chief difficulties arises from the attempts of most of the proposed legislation, including the Wagner-Murray-Dingell bill, to provide a single system of medical care for every portion of the country. There are areas in the United States in which a multiplicity of competent physicians and specialists makes possible free choice of doctor and hospital and a maintenance of the present system of medical practice. There are no doubt areas in which the only method for providing medical care would be the employment of a full-time salaried physician. There are still other areas in which group medical practice, from both points of view—that is, a group of physicians serving a group of patients organized under a prepayment system—may be the best possible solution to the local situation. The medical profession is giving careful consideration to all these plans, and there are hundreds of plans now being utilized to meet varying local needs.

The standards of living of the people of the United States are generally recognized as the best in the world. No doubt there are areas in which the standards of living are much lower than in other areas. The problem concerned is not, however, how to give less of everything to *all* the people but rather how to give more and better of everything to *all* the people. Many of the deficiencies in distribution of medical service result from improvidence of persons in some groups and from inadequate evaluation of what is most necessary for life and happiness. The tendency to place responsibility for the intimate affairs of his life on the individual and to limit responsibility to local rather than federal control may well be fundamental in the maintenance of the American democracy.

Doctors recognize that food, fuel, clothing and shelter are even more important in the prevention of disease than immunization or periodical physical examination. The practice of preventive medicine is barely recognized by the Wagner-Murray-Dingell bill. An attempt to build security against sickness by providing more care after the patient becomes ill, rather than by overcoming the factors that lead to sickness, is illogical and unscientific. The health of the nation cannot be guaranteed by any formula which places the economics of medical service above the advancement of medical science and the quality of medical service.

In the years that have passed since the Federal Security Agency was established, its division for the study of medical care has come forward with only one proposal—a nation-wide system of compulsory sickness insurance administered from Washington. In this period the medical profession and the people, as represented by the Congress of the United States, have repeatedly rejected that proposal and have gone ahead without much aid from the federal government to develop hundreds of plans and varying technics in an attempt to find a workable solution for a wider distribution of medical care without the loss of the fundamental freedoms that are guaranteed by the Constitution. Without too much government interference the people are finding the answer. No doubt one of the most important steps next to be considered is the exact extent and method by which federal government may aid local and state governments and individual enterprise in extending medical service to those who are not otherwise able to secure it.

Protect Young Eyes!

By H. WALLACE LANE

Handicapped by lack of depth perception, the child who loses sight in one eye may soon become lonely

THOUSANDS of people are half blind today simply because their parents did not know there was any danger of lost vision when they were children—until it was too late. I am not speaking of those blinded by accident, although many of these accidents could also be prevented if parents used some foresight. This message is for parents and parents to be. It is a message particularly for parents of preschool age children, for this is the time when the child is most apt to lose the sight of one eye (amblyopia), and this is the time—the only time—when his vision can be restored.

When we think of preventive medicine we naturally think of vaccination, sanitation, quarantine and other well known preventive procedures. These are important, vitally important, to millions of people, but there is one phase of preventive medicine which has been terribly neglected. The tragedy is the greater because it can be avoided so easily by parents in every home.

To those of us who are fortunate enough to have two good eyes, it does not seem, at first thought, to be such a great loss to have only one eye. You say, "Think how much worse it is for those with no vision!" The total loss of sight is of course a far greater burden, it is true, but the fact that some suffer a greater hardship is no excuse for permitting others to be needlessly handicapped.

You want your boy and your girl to grow up to be robust, happy and intelligent. You want them to have every possible advantage. You cringe at the thought of their losing an eye in a playground accident. This is a horrible thought, indeed, but do you know that the sons and daughters of hundreds of parents who read this are certain to lose the sight of one eye—without any accident—unless something is done to prevent it?

Perhaps you think that it is an inherited condition and can't be helped. You say you know it is, because Uncle Will and Cousin Henry and Cousin Bill are blind in one eye; it just runs in the family. It is true that the tendency, or the predisposition to amblyopia, does run in families—and that makes it all the more important for you to be on your guard if any of your relatives or your wife's or husband's relatives are blind in one eye.

If you are one who needs to be convinced that being blind in one eye is a handicap, let me cite some facts. Childhood, and particularly adolescence, are difficult enough without any added burdens. Yet a child who is blind in one eye lacks that aptitude called depth perception—the ability to recognize just how

far a rapidly approaching object is from him—as, for example, a baseball thrown to him.

Binocular vision, the basis of depth perception, has been a big boon to man throughout his evolutionary development. It is one of the fundamental advantages we have over lower animals and has contributed much to the development of the human brain. No person deprived of this can be as skilful at any physical activity as he might have become with it.

The lack of depth perception means a rough journey through life for any child. He is not aware of what is wrong, but he soon learns that he is clumsy at baseball, basketball, football—most games, in fact—for they are based on ability requiring this aptitude. No one likes to be conspicuously inferior; being awkward, the child prefers to avoid playing with others. Since he refrains from daily games, he does not get the constant exercise that children need to develop muscles. Too little exercise over a period of months and years inevitably leads to a poorly developed body. The result is a child who hates athletics, a child who is more studious than usual and tends toward introversion, a child who is in many ways inferior and feels inferior.

Once acquired, this feeling of inferiority can spread to so many activities that such a young person is burdened with a load that is going to be hard, if not impossible, for him to shed. It will influence him in his choice of a vocation. He will often react to it by assuming a cocky, irritating, superior attitude which will decimate the number of his friends and slow his advancement.

If these are not disadvantages enough, consider these others: The physically handicapped need special selection for industry. Workman's compensation and the ever present danger of accidental injury make it imperative that industries select those with good vision and good depth perception.

In wartime, standards are often lowered, but it is small consolation to have to depend on a war to obtain a job. Perhaps you hope your child will enter a profession. No one needs this ability to see clearly and judge distances accurately more than a surgeon or surgical nurse; the good roentgenologist requires binocular vision; it is a real asset to any doctor, scientist or laboratory worker. The Navy, the Marine Corps, and in peacetime the Army, would never accept a man or woman blind in one eye. The Civil Service Commission, with much less reason, insists on standards of physical fitness which would exclude such a person from most of the positions it controls. Though the applicant may be fully capable of performing the work, he may not be given the chance if his eyesight is thus faulty.

In the realm of everyday living depth perception may not be essential, but it is a big help in many ways which people who see perfectly commonly overlook. When driving on the highway, for example, one must be able to judge the distance to an oncoming car. This world is on the verge of a great era in aviation, an age in which every person who can is going to fly his own plane. This privilege will be denied the amblyoptic person, for where is depth perception more vital than in landing a rapidly flying plane?

You are doing your son or your daughter irreparable damage if you permit him or her to become blind in one eye. I am speaking here of a specific cause of blindness. It occurs in young children, usually from 1 to 5 years of age. It begins because the two eyes focus at different points. To overcome this, nature, by means of the lens and the muscles of the eye, compensates so that a single object is seen distinctly by both eyes. But this effort requires considerable nervous energy. Eventually the time comes when the child is so tired that he lets down for a while. He ceases to make both eyes cooperate. He finds, unconsciously, that it is much easier to use one eye and ignore the other. He lets the other eye stray far from the path of vision; in short, he becomes cross-eyed. He has the condition known to doctors as strabismus and depends on only one eye for vision. At once, the unused eye begins to weaken.

Parents are unhappy when their child becomes cross-eyed, but it is really a blessing in disguise. It is the warning that that child is in imminent danger of losing the sight of one eye! It indicates that he must be taken to a good ophthalmologist. Don't put off going to the doctor! The sooner the child is made to use the eye, the greater his chance of recovering the full use of it. Vision in the "crossed" eye may be lost in a few months. Treatment will depend on the age of the child and his individual condition. By *(Continued on page 317)*

Hazards to health in industry multiply with intensification of the war effort, but industrial health authorities are meeting new problems as they arise and the worker is safer now than ever before

INDUSTRIAL HYGIENE

MRS. JONES' Janie was too young to be a WAC or WAVE. The assembly line was next best, she decided. She got work in a factory making chemicals to fight incendiary bombs. Eight days later she was dead.

Harry Harvey gave up his grocery store job and learned to be a spray painter. Never in his life had he been sick. But several months later, his liver was enlarged and the size of his red blood cells was increasing alarmingly.

Tim Tully never thought he'd be a quitter, never thought of striking until—like other workers in a Seattle shipyard—his skin became irritated. Then he put down his tools and marched home.

Bob Brown had never seen a doctor. One day, turning out airplane parts in a West Coast plant, he felt ill. His skin turned yellow. Several of his fellow workers had it, too.

Mary Martin was a painter, but not the sort that starves in garrets. Today her chances of ever painting again are gone. She is suffering from radium poisoning—contracted when she switched to painting dial faces on airplane instrument boards.

Casualties like these are now almost a thing of the past. Doctors, chemists and engineers have stepped in and taken over, in all the instances mentioned and many more. Together with state and federal divisions of industrial hygiene and the Army and Navy, they are winning their war against the health saboteurs of industry.

What made Janie die? Or Harry's liver enlarge, or Tim's skin break into a rash? Why did Bob get jaundice and Mary radium poisoning?

Janie was working in an embroidery factory hastily converted into a chemical warfare plant and operated by a management unfamiliar with chemicals. Employees were warned against inhaling fumes from the methyl bromide tank, conspicuously labeled "poison." Water pans were provided at each work table to prevent chemical contamination of the worker's face or hands as he passed the methyl bromide through dry ice, mixed it with oxygen and sealed it in glass tubes to be used as an extinguishing chemical. But that was not enough.

After Janie died, and other workers suffered, the owner was ordered to close his factory until engineers drew up plans for ventilation so that these same operations might henceforth be carried on with complete safety.

When Harry became ill the plant doctor suspected that it might be toluol poisoning. Toluol was being used for the first time in unprecedented quantities.

In company with a physician of the U. S. Public Health Service from the Division of Industrial Hygiene, all workers who used toluol frequently were examined. Detailed studies of each exposed worker's blood were made, and a chemist was set to work checking the precise amounts of toluol present in the factory air. A fairly good correlation was found between the intensity of exposure and the medical findings. The concentration of toluol in the plant atmosphere was sufficient to cause serious trouble.

While the workers were receiving medical care, a Division of Industrial Hygiene engineer arrived. Years of experience with similar problems made it possible for him to design a ventilating system which would maintain the concentration of toluol at a safe level. Long after Harry was back at work, the Division of Industrial Hygiene's statistical division was busy recording these toxicologic data, to be applied wherever toluol was used.

tanks for airplanes found that by using the improved solvent discovered by a Division of Industrial Hygiene chemist, its output was increased. Parts dried faster, and the time between successive stages of manufacture was reduced.

In the manufacture of Army raincoats, solvents such as acetone and ethyl-methyl ketone, when used in close quarters, often caused explosive fires. Now that New York City has many Army raincoat contracts, a campaign is under way to use the new solvents.

Degreasing agents like the one that caused Bob Brown's jaundice have recently provided considerable work for industrial hygienists. Carbon tetrachloride, used carelessly from open cans, is likely to cause jaundice and liver trouble, though trichlorethylene, in the amounts used in peacetime, seldom caused more than a transient narcosis. But its increased use under wartime conditions, without a corresponding enlargement of air space in the work room, was affecting the nervous system severely enough to cause casualties. Medical supervision and improved ventilation have removed the hazard.

GOES TO WAR

By FAYE HENLE

When Tim and his fellow workers struck, an urgent request for help met with prompt response. A staff of physicians, chemists and engineers was flown to the scene. Treatment for the skin ailment was immediately instituted, and simultaneously investigations were under way to find out which workers first got the disease and what substances they used. It was the group working on cable and wire insulation that first became involved. At once the insulating agents were tested chemically, as were insulating agents used in other shipyards where workers were healthy. Analysis showed that Tim's company was using chlorinated naphthalenes and diphenyls in the insulating process. This caused the disease.

At the end of three days the strike was ended. With their skin healing, the shipbuilders were back at work.

Treacherous solvents—prohibitively expensive to control—have been the cause of many SOS calls. After each call is answered and the individual plant's problem solved, experimentation with these agents continues in industrial hygiene laboratories.

Formulas for twenty-five solvents are available to plants requesting less toxic substitutes for benzol. A plant making self-sealing rubber

During World War I, some protection was offered industrial workers through an office of scientific research in the National Institute of Health. Its studies covered silicosis, poisonous fumes, and cancer resulting from the mishandling of radium. By 1935, only half a dozen states had industrial hygiene units studying and correcting occupational hazards. But the same year the Division of Industrial Hygiene was organized, funds were made available to the states. By 1941 there were thirty-two state divisions operating, and four separate departments were functioning in such large industrial centers as Detroit and Baltimore. Since Pearl Harbor, eleven more units have been added. Educational programs advocating industrial nursing, dentistry within war plants and proper nutrition are carried on, along with the work of caring for war industry hazards.

Industrial hygiene has come of age. Enough information to prevent the ill effects of every industrial exposure is available to plants everywhere. It saves the lives and health of our millions of workers, without whose help neither battles nor invasions nor occupations of distant lands could ever be accomplished, or victory finally won.

"THE $35,000 QUESTION"

By WILL O'NEIL

FIFTY TIMES a day, each psychiatrist in the armed forces induction stations must answer the $35,000 question: Is this man mentally fit for duty in our armed forces?

The psychiatrists have said "No" nearly a million times since we began drafting men under the Selective Service Act of 1940. But they haven't said it often enough.

None of the armed forces want the psychiatrically unfit. The Army is especially alarmed. In some battle areas as high as 40 per cent of the casualties have been caused by psychiatric disabilities! Forty-five per cent of the Army's medical discharges are for these disablements!

Many of these men should never have been taken into the Army. As civilians they were, perhaps, a little bit different, a little nervous, a little eccentric—even though they carried on well and often filled important jobs. In the Army they are military liabilities and medical problems. And after service, experience since World War I has shown, they tend to become public liabilities at housing and treatment costs of over $35,000 per man.

The examining psychiatrists have had neither the time nor the information to solve this problem. They have had one, two or at most, ten minutes in which to interview each man and arrive at a judgment concerning his ability to serve. Starting from scratch with a new patient in each case, it is no wonder they have made thousands of mistakes. The miracle lies in the number of unfit men they have eliminated under their working conditions.

Help for them is on the way. Physicians, social workers, schools, mental institutions and other sources are joining with draft boards in the greatest medical survey of its kind ever attempted in order to feed medical, social and school histories on draftees to the psychiatrists.

The need for such help has long been apparent to Col. Leonard G. Rowntree, chief of the Selective Service medical division at national headquarters, and other officers of the system. The time the psychiatrists can give to each individual examination is limited by the fact that there aren't more than 4,000 psychiatrists in the nation. The question, then, was how to get information which would aid the limited and more or less fixed number of examining psychiatrists. Pilot programs were established in Baltimore, in New York state outside New York City, in Pennsylvania and in Connecticut. In Connecticut, for example, there is a central index which includes all available information of the state's residents who have had mental diseases, are mentally retarded or are habitual offenders against the law. Because of this index and the relatively small size of the state, it was comparatively easy for draft boards there to assemble information which would give examining psychiatrists helpful knowledge about the men they were examining.

Most states, however, had no such central index system, even for cases of actual commitment to mental institutions. And the fact that a man had never been committed to an institution, or treated for a mental illness or confined as an offender, didn't mean that he was mentally fit for service in the armed forces.

Using these pilot programs as a guide and with the counsel of the National Committee for Mental Hygiene, Colonel Rowntree and his aides worked out a plan for a national survey which would cover every remaining registrant before he reported for the induction physical examination—at least 3,000,000 men. While the major aim and purpose of the survey will be to aid the psychiatrists, it is also expected to be of material aid in determining the physical fitness for service of prospective soldiers and sailors.

One of the first problems to be met in setting up the survey was one of identification. Public records tend to become impersonal data, unconnected with any living being. The surveyors had to be sure the right man and the right records would be connected.

Two forms to be filled in by draft registrants were worked out. The *(Continued on page 282)*

By GABRIEL FARRELL

AN AMERICAN center for those blinded in war, modeled on the famous St. Dunstan's Hostel in England, is to be established by the United States Army, according to an order recently issued from the Office of the Surgeon General. Col. Derrick T. Vail, senior ophthalmologist, United States Army, European Theater of Operations, came back to this country on a brief furlough recently to urge such a center. Colonel Vail had seen the successful way in which blinded soldiers of the British forces are being retrained at St. Dunstan's, established for this purpose during World War I. Convinced that the English have the right philosophy and the right approach to this important problem, he felt that America might well follow their example and should do so immediately.

Up to the present time, there has been no adequate plan in this country to meet the needs of blinded persons if a large number should be returned from the various theaters of global war. This has caused grave concern among all who are interested in the blind and in a program for the service men and women who have lost or will lose their sight in this war. The recent order from the Office of the Surgeon General, supported by a man who can speak with authority and from experience, may give assurance of the adequate program that has been eagerly sought since the beginning of the war.

During the last war and immediately following it, the disabled soldiers and sailors of this country had to deal with three different government agencies. This led to so much confusion that in 1921 the President appointed a committee to make an inquiry into the administration of laws providing for the care of disabled soldiers. This resulted in the creation of the Veterans' Bureau as an independent unit in 1921, and in 1930, by executive order, all facilities for veterans were consolidated under the Veterans' Administration. Since the outbreak of this war, conferences have been held between the representatives of national organizations for the blind, the Veterans' Administration, the Surgeon General's office of the Army and the Medical Corps of the Navy to see if the mistakes of the last war could

be avoided and a common program for the war blinded set up under some form of joint auspices.

As a result of these conferences it has now been decided that the Army will assume full responsibility for the social adjustment of the blinded personnel of both the Army and the Navy. This will be undertaken at the center ordered to be established at some point near both an army and a navy general hospital to which all eye patients and patients for plastic surgery will be assigned. As soon as this form of rehabilitation and all surgical care are completed, those classified as blind will be transferred to the Veterans' Administration for such vocational rehabilitation and retraining as present legislation will permit.

This is an intelligent and practical approach to the problem, because it is hoped that the number of those who lose their sight in the war will not be so large as to justify several programs and centers. It is impossible to obtain an accurate figure on the number of persons who have been reported as blinded in this war so far, but whatever the number may be, it is the desire of the American people that those who lose their sight in the service of the country shall have the best medical and surgical care and every opportunity to be trained for normal civilian life.

Perhaps the most hopeful thing that can be said about this problem is that the number of cases of war incurred blindness will be smaller than most people anticipate. The Army, on the basis of experience in the last war, figures the incidence of expected blindness as two and a half in each thousand casualties. According to the records of the Medical Department, 117 men lost their sight in the last World War and of these only 65 were totally blinded. A larger number, including all the services, was reported by the Board for Vocational Education as of 1922, when a total of 308 was recorded as blind or with such serious impairment of vision as to need retraining. Of these, about one half lost their sight through actual combat and the others through nonservice connected causes. In 1922, France reported 2,200 blinded pensioners as a result of the war, and Belgium placed the number of her blind at 95. Among all the troops of the British Empire in the last war, there were slightly under 3,000 cases of blindness.

"With practically no exception," wrote Sir Arthur Pearson, founder of St. Dunstan's, in his book, "Victory Over Blindness," "all the soldiers and sailors of the British Imperial Forces blinded in the war came under my care in order to learn how to be blind." At the outset of his work Sir Arthur determined that the sole objective would be to restore blinded men to the positions in life from which they had come. As a center for this work, Sir Arthur was fortunate in securing the magnificent mansion of the American banker, Otto Kahn, situated in the Inner Circle of Regent's Park, in London. "I wanted delightful surroundings," said Sir Arthur, and he found them in this estate with fifteen acres of gardens and grounds larger than any in London save Buckingham Palace. As the work grew, other buildings in the city were occupied, and later convalescent homes were opened at Brighton and St. Leonard's-on-the-Sea.

While the impelling force in the retraining of the blind at St. Dunstan's was the inspiring personality of its leader, there were certain principles which made the program successful. Men were not admitted to St. Dunstan's until the completion of medical care at a nearby hospital where all eye patients were centered. The first contacts with blinded soldiers, however, were made in the hospital by St. Dunstan's workers. The program had the definite but simple goal of teaching the men how to be blind: how to eat, how to shave, how to smoke and other common activities were the first steps. The men were then prepared and financially assisted to take up life under as nearly as possible the same conditions as prevailed before they entered the Army or Navy. A program of settlement, home industries and after care was set up from the beginning. "Once a St. Dunstaner always a St. Dunstaner," was a guiding principle. St. Dunstan's cares for its men through life. When war broke out in 1939, there were still 2,000 men of the first world war who looked to St. Dunstan's for a hearty welcome, a warm friendship and expert help.

When World War II broke out, England was fortunate in having this center already functioning for the retraining of blind men. They were also fortunate in the present leadership of Lt.Col. Sir Ian Fraser, M.P. Sir Ian is a product of St. Dunstan's. When only 18, he was blinded in the Battle of the Somme. After completing his training at St. Dunstan's, he qualified as a lawyer and entered Parliament in his early twenties. For several years a governor of the British Broadcasting Corporation, he was able to press the cause of disabled veterans on British public opinion and obtained many reforms for them in Parliament. Sir Ian was in this country about a year ago and at that time offered the United States government the facilities of St. Dunstan's for the care and treatment of any blinded members of our armed forces in England, Egypt, India or South Africa. *(Continued on page 317)*

ANESTHESIA BY VEIN

By H. M. AUSHERMAN

THE PLACE is an army general hospital here in the United States; more specifically, it is a surgical ward filled with casualties of World War II. These men have been wounded in action by enemy fire—land mine explosions, shrapnel, flak, bullets or any one of a score of other ways known to modern warfare. Most of these men are young—21 to 28 years of age—and are in perfect physical condition except for their injuries. These injuries vary from crippling deformities involving only one finger or one hand to those including all the extremities, or perhaps part of the man's face. In each case the soldier has been sent from a hospital in his particular theater of operations back to the United States because of the long time required to fit him for duty as a soldier or return him to a useful place in civilian life.

It is the afternoon of the "day before." By that I mean that some of these men have been scheduled for corrective operative surgery by their ward surgeon for the next morning. There are three men in this particular ward who are on the list. Each is concerned about the operation that is to be done on him.

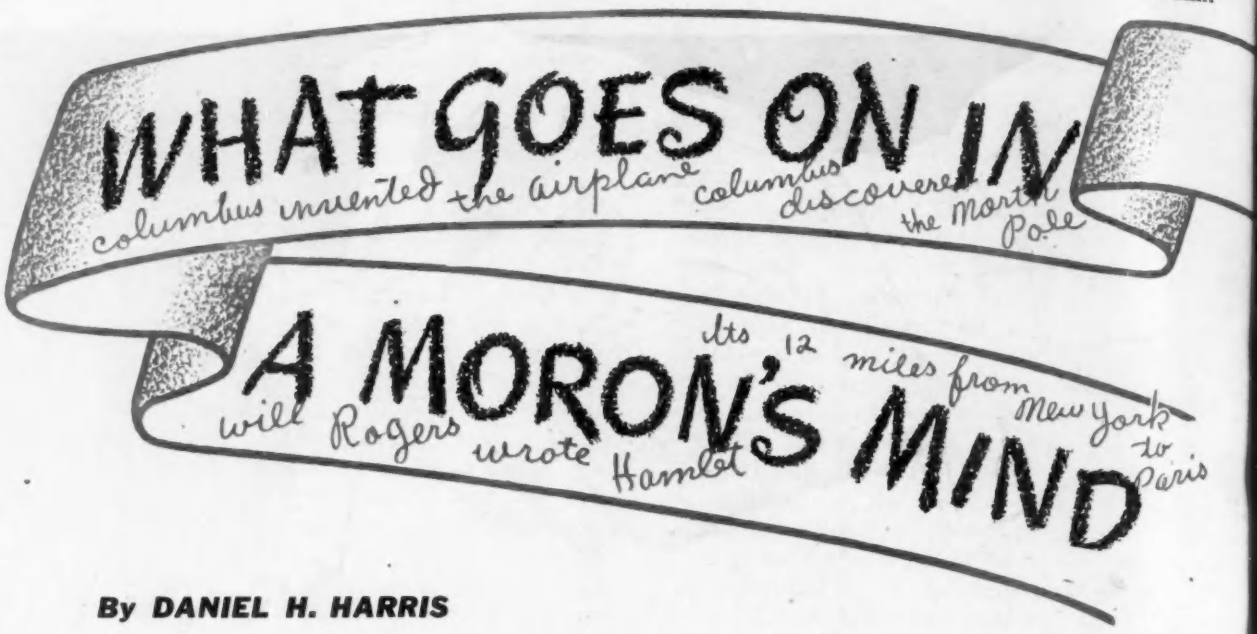
When the anesthetist comes into this ward to check over each of his three candidates for anesthesia in order to determine the anesthetic agent and method of administration best suited to each man for his particular operation on the following day, the first man greets him with the oft-asked question, "Doc, what anesthetic are you going to give me?" Then, before the anesthetist has time to reply, "How about giving me the needle in the arm?"—pointing to the bend of the elbow and meaning the intravenous anesthetic. He goes on to say that he has been put to sleep four times, while overseas, and emphatically states that of them all he prefers the "needle in the arm," or the intravenous anesthesia. The second man says rather apologetically, "If I have anything to say about what anesthetic you use on me let me have the 'shot in the arm' like you gave the soldier in bed six for his operation."

Intravenous anesthesia has become so popular among the patients of this hospital that it is almost always emphatically requested by the patient who has had it or who has heard about it.

You may ask, "What is this intravenous drug? It must be pleasant to take or the patients wouldn't request it, but is it safe? Can it be used for all operations? Can it be used on all patients? Will it displace other forms of anesthesia?"

The name of this relatively new anesthetic drug is pentothal sodium. It is one of the familiar barbituric acid family but differs from others in that it acts much more rapidly and its effects are of shorter duration.

It was first introduced in 1934 by Dr. John Lundy, anesthetist of a famous American clinic, and has enjoyed an increasing popularity by civilian physicians. The fact that pentothal sodium is receiving such a favorable acceptance by patients is due *(Continued on page 312)*


WHAT GOES ON IN
columbus invented the airplane
columbus discovered the North Pole
A MORON'S MIND
Its 12 miles from New York to Paris
Will Rogers wrote Hamlet

By DANIEL H. HARRIS

SUPPOSE you knew a man who thought the population of the United States was "about ten thousand," who had never heard of Paris, and who answered "Columbus" when you asked him who invented the airplane. Would you want to trust any part of your life and your country's safety to his care? More concretely, if you had anything to say about it would you wish to have him in the United States Navy?

Neither would the Navy. That is one reason a number of psychologists, the writer included, have been commissioned in the Naval Reserve and assigned to naval receiving and training stations. Many psychologists have been assigned elsewhere in the naval service, and those of us at training stations have duties in addition to those here spoken of; but it is imparting no confidential information to say that one major concern of psychologists at training stations is the weeding out of morons.

You can't spot a moron just by looking at him. Most morons look and dress and act like any one else, at first glance. Just as with a physical defect of the eye, ear or lung, a mental defect can be definitely determined only through competent examination. This examination may take as long as an hour. The purpose is not so much to find out how much the subject knows—although that is part of it—as it is to measure how well or how poorly his mind functions.

Of course, one cannot see the mind function. One can only see or hear the man do or say things, and draw inferences therefrom, on the basis of what other people are known to do or say in similar circumstances. Our main tool in measuring mental ability is a carefully standardized interview, popularly known as an "I. Q." test but more properly called a psychometric examination.

What follows is culled from answers the writer received while examining about 150 morons during late 1942 and early 1943. They had all volunteered for the Navy. With all due respect to their patriotism, it is a relief to know that not one of them is now cluttering up a battleship or a destroyer or any other Naval vessel or establishment!

The examination used at Great Lakes Naval Training Station has a number of parts, one of which consists of general information items. It is in the answers to these that we can often catch the most concrete and revealing glimpses of the mental furniture of a moron's mind, in all its barren and shadowy confusion. A prime instance is furnished by the 19 year old from Georgia who insisted that Gene Talmadge was President of the United States. This, however, was unusual; even most morons know that Franklin D. Roosevelt is President. But the question, "Who was the last President before Roosevelt?" brings a number of interesting responses. "Abraham Lincoln" is quite common, and there is an occasional "George Washington," "Jefferson," "McKinley," or "Wilson." Such answers simply reflect ignorance of past history in varying degrees; one must remember that many of these men are so young that all political events before 1932 were really before their time. On the other hand, when a Negro answers this question with "Booker T. Washington," or a Louisianan with "Huey P. Long," one begins to get an idea of the kind of political —and geographic—concepts in the midst of which a moron moves and has his mental being.

Then there is the occasional "Willkie" in answer to this question—arising possibly from an intransigent Republicanism.

In an air-minded age, nobody likes to admit that he doesn't know who invented the airplane. Not one moron in a hundred will know the answer, but practically every one will nominate somebody for the honor. Quite often it is Henry Ford. A more frequent guess is Lindbergh. Now and then the response is "Franklin D. Roosevelt"; there is an occasional "Admiral Byrd"; and one contrary-minded individual contributed "The Wrong Brothers!"

Mental defectives seem to remember one or two great names from their painful school days, or from the picture papers, which names they will solemnly trot out at every opportunity. Thus, the boy who thought Columbus invented the airplane also gave him credit for discovering the North Pole. As it happens, "Columbus" is a pretty frequent answer to the question concerning Polar discovery. Even more frequent is "Admiral Byrd." Magellan got one vote, and one hero worshipper credited Napoleon with this feat.

It is a rare moron who knows who wrote Hamlet or Huckleberry Finn; generally, such literary questions bring just a blank look or a shake of the head. Now and then those who once heard of a book or a writer will venture "Longfellow" or "Will Rogers." "Tom Sawyer" is occasionally offered as the author of Huckleberry Finn.

It may be hard to believe, but it is a fact that in the United States of America in our time there are people who talk and walk, have radios in their homes, have volunteered to join the United States Navy—and have never heard of London. There is a much larger number of people who have heard of London but do not know where it is. Many of the latter will locate it as "over the water" but cannot be more specific. One youngster from Alabama, to whom all these foreign places are the same, reckoned it was in New York. Occasionally the answer "Europe" was given. One would-be sailor thought it was in France; while another—a defeatist, no doubt—awarded the city to Germany.

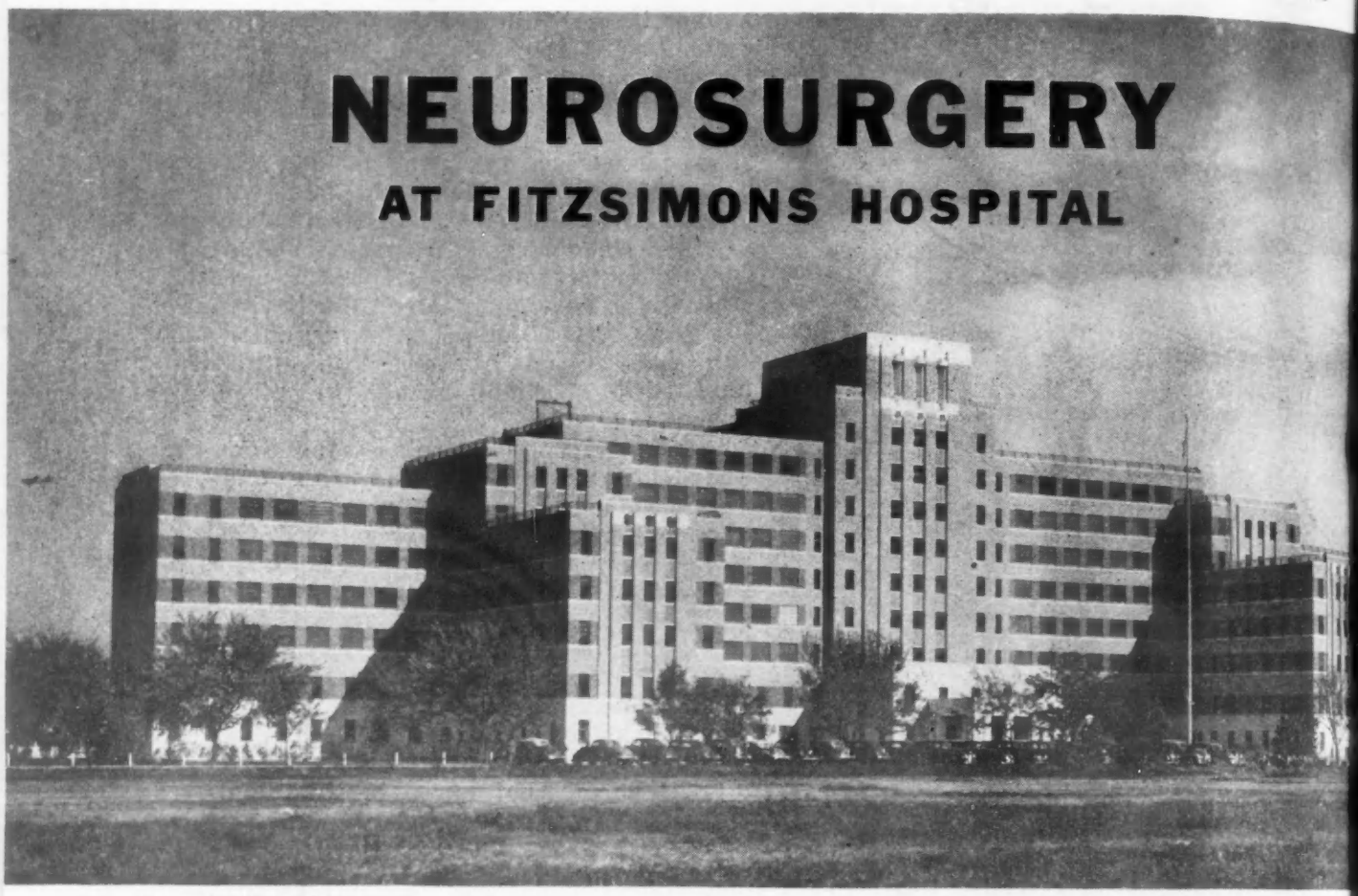
When it comes to places less in the news than London, there is usually no response at all. Not a single moron knew where Brazil is. Many of them obviously had never heard the name before. A few tried "over the water," as with London. One, more erudite, came forth with "Egypt." Asked where Egypt is, he replied "India"; but, pressed by the unrelenting examiner for the location of India, he shrugged his shoulders and gave up. Only now and then will a mental defective be able to name the capital city of Italy or Japan. Even boys of Italian name and descent will not know what the capital of Italy is and have never heard of the Vatican. One boy's reply, however, was striking for accidental validity, of a sort. Asked for the capital of Japan, he said "Berlin."

Distance is another thing that the feeble-minded have only a hazy idea of. Maybe it is because they never got up to the big numbers in school; but when asked how far it is, approximately, from Paris to New York, they generally give a gross underestimate. The lowest guess was 12 miles! Answers between 200 and 500 miles are fairly frequent. And of course there were those who had never heard of Paris.

Getting closer to home but still in the realm of figures comes the question as to the population of the United States. Needless to say, the word "population" often has to be explained. Here again our simple brethren tend to err on the conservative side. The most cautious figure given was 500. Quite a few guesses are under 100,000. One reply, coming after some reflection, showed a commendable zeal for accuracy as against careless, round figures: "exactly 5,253,090."

As mentioned earlier, information questions make up only a small part of the examination. There are a number of types of items which might be called "thought questions." On this kind of material a moron usually falls as far short as on straight information; but for some reason the replies offer *(Continued on page 312)*

NEUROSURGERY
AT FITZSIMONS HOSPITAL



Photos by Floyd McCall

Exterior view of Fitzsimons General Hospital at Denver, Colo. The work of the neurosurgical section at Fitzsimons is described in this article

By GRACE IGO HALL

THIS IS THE neurosurgical section of the famous Fitzsimons General Hospital, the largest United States Army General Hospital, the place where astonishing feats in surgery are being performed for soldiers who have received injuries in battle areas or elsewhere. From all parts of the world these soldiers arrive daily, by train, by plane and by army ambulance. Many have brain tumors; some have depressed skull fractures—pressure against the brain; a few have spinal injuries; many have received injuries to the nerves, arms, legs or face—injuries so paralyzing that frequently the soldiers are unable to see, hear or walk.

The neurosurgical section, which was added a year ago to Fitzsimons General Hospital and which is similar to sixteen other neurosurgical sections located in different army hospitals scattered over the United States, cares most skilfully for nerve injuries and brain and spinal impairments, to the extent that many of these cases which would have been considered fatal years ago are returned to active life.

Neurosurgery cannot be considered entirely new. Years ago, prehistoric skulls which plainly showed crude attempts at brain surgery were found and studied by scientists. In the 1880s, in England, Sir Victor Horsley removed brain tumors. Then, in France, ten years before the first world war, Dr. Harvey Cushing, known to surgeons everywhere as the father of neurosurgery and who died only six years ago, proved for the medical profession that successful operations in brain surgery can be accomplished. Soon physicians and surgeons everywhere recognized the wisdom of Dr. Cushing's findings, and from then on neurosurgery has been practiced in many of our leading hospitals.

Recently, when I went to visit the neurosurgical section of Fitzsimons General Hospital, located on the outskirts of Denver's east city limits, the chief of the surgical staff ushered me from his office into a big, sunny room where the surgeon in charge of the neurosurgical section sat behind a large desk. After I conversed with him for a few minutes, he

said, "Come, I'll introduce you right now to one of our nurses. She will show you around the neurosurgical ward."

The nurse took me to see Major Kohn of the Army's 96th Bombardment Group, a veteran of twenty-six years of army service. As we entered the room, Major Kohn, who was sitting up in bed, his head bandaged, smiled a cheery greeting.

"You're looking fine this morning, Major Kohn. I've brought you a visitor, Mrs. Hall," the nurse said as she returned his smile.

"Yes, I'm feeling swell. If I felt any better I'd go dancing tonight," Major Kohn answered with a wide grin.

"You'd never guess, would you, Mrs. Hall, to look at Major Kohn, that he was operated on just two days ago for brain tumor?" the nurse asked me.

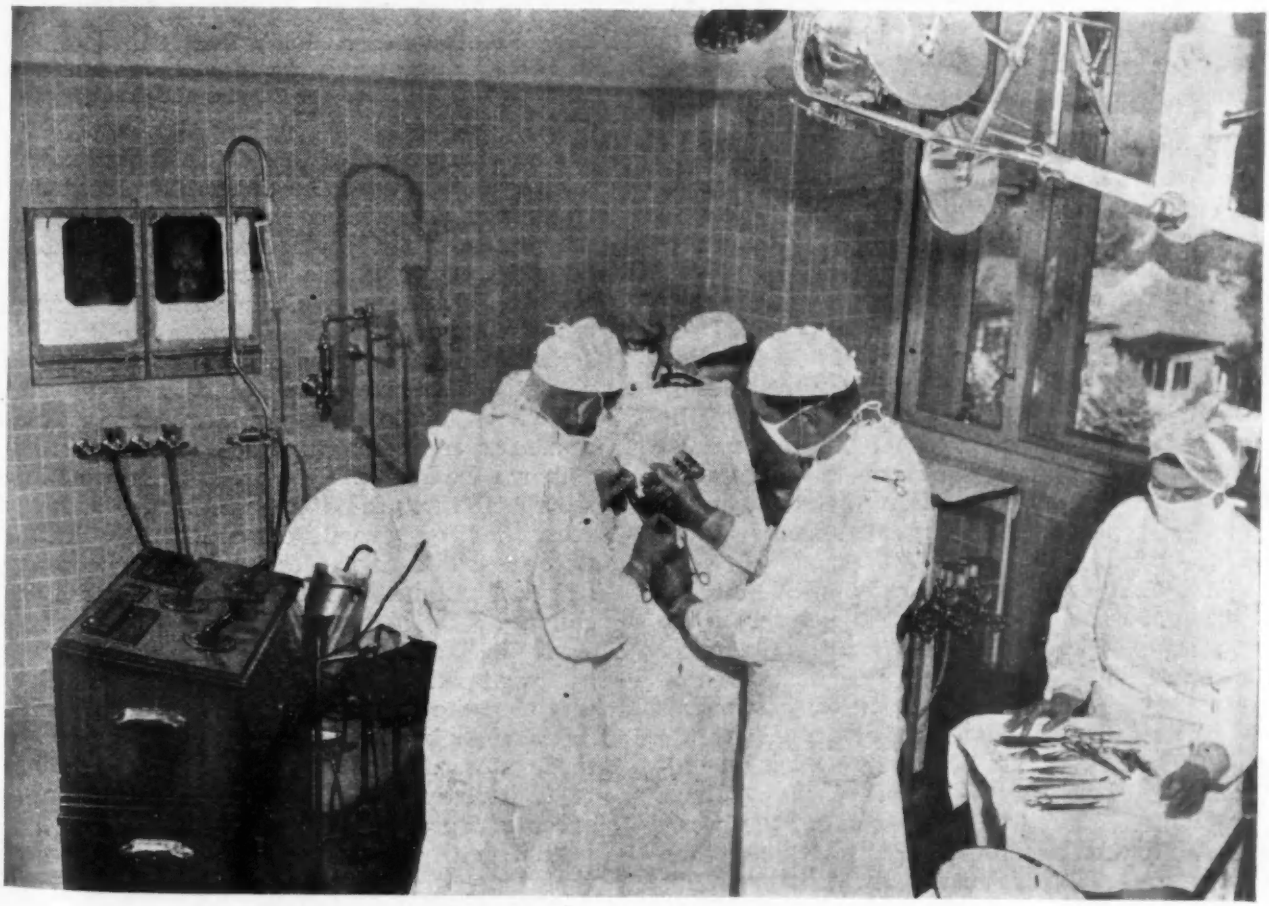
"A brain tumor!" I said incredulously. "Why, isn't it dangerous for him to be sitting up like this so soon?"

"Not at all," Major Kohn answered. "You see, sitting up and walking are part of the post-operative treatment that the doctors give you here. Surgeons used to think as you do, Mrs. Hall, that a patient who's been operated on for a brain tumor ought to stay in bed for a long time following the operation, but the battle of Britain during the blitz in England changed that idea." He went on to explain that during that battle so many patients were injured that there were not half enough beds to accommodate them; in fact, patients with head injuries had to get up after two or three days. These patients, unbelievable as it seemed, progressed more rapidly than those who stayed in bed a longer time.

Why? The answer is simple. When a patient is sitting or standing, the injured brain is in a normal position so that the blood may more readily return to the heart. If the patient were to remain lying down in bed in one position for a long time, unnatural pressures would be set up within the brain area and detain the patient's progress.

The soldier occupying the next room was a young, dark-eyed chap from Lowry Field, near Denver. He was eager to explain to me about his trouble. "I had one of the rarest types of brain tumor that physicians know about—it was a tumor of the pineal gland, close to the center of the brain." He went on to tell me

An operation for brain tumor is being performed here. Notice the x-ray pictures showing patient's skull. This patient recovered quickly



Surgeon examines soldier's arm after operation to restore ulnar nerve shattered by bullet. Lost function was regained for fingers and hand

that for months while in training he had terrific headaches, then suddenly he became deaf and blind. He was rushed to Fitzsimons hospital and, after a thorough examination, was operated on. Now his headaches are gone, he can see and hear clearly and even the skin on the side of his head is healed over the section of his new, plastic skull.

Today, through fine medical research, many different methods have been found which are used in advance of a brain operation to locate the tumors, abscesses and brain lesions. Sometimes, ordinary x-ray photographs show the trouble, but frequently to get the best results before taking the x-ray pictures it is necessary, by spinal puncture or other means, to introduce air into the brain ventricles or spinal canal of the patient.

Still another amazing device used here at Fitzsimons General Hospital to determine the trouble is called the electroencephalograph. These radio tube amplifiers receive and magnify about 10 million times the tiny impulses of electric energy which are given off by the brain, and then finally translate these magnified impulses into a series of wavy lines. Knowing the length and shape of the wavy lines, the trained operator is able to get an indication of the nature of the trouble. This device is so sensitive to electric impulses that whenever it is used the patient is placed in a room insulated with copper screen to keep out the static electricity which would be created by people walking in the hallway outside.

Knives which use electric sparks as their cutting edges instead of the more familiar steel-edged ones play an important role in removing the tumors and abscesses, once they have been located, but plain, ordinary scalpels and scissors are also used in some cases.

Down the long, buff-colored, soundproof hall set apart from the patient's room was a cheery recreation lounge with davenports, easy chairs and several card tables. I heard the sound of good natured laughter as we entered the room.

"Hello, there!" one young man with a bandage wrapped around his head, who was playing a game of cards with two companion soldiers, looked up and called across the room to the nurse.

"Hello, yourself. How's the game coming?" she said in response.

"I'm getting beat," the young man grinned broadly.

"That's Private Deleure who just spoke to me," the nurse remarked, "attached to the 67th Mess Squadron at Lowry Field, and a good example of what neurosurgery is doing for the stricken soldiers brought here. When he entered the hospital a few weeks ago he was blind in one eye and had lost all sense of coordination. The surgeon realized he must be operated on immediately to keep him from losing the sight of his other eye. Now look at him. He didn't lose the sight of his good eye, and today he is so much improved that the doctors say he may regain the normal functioning of his bad eye.

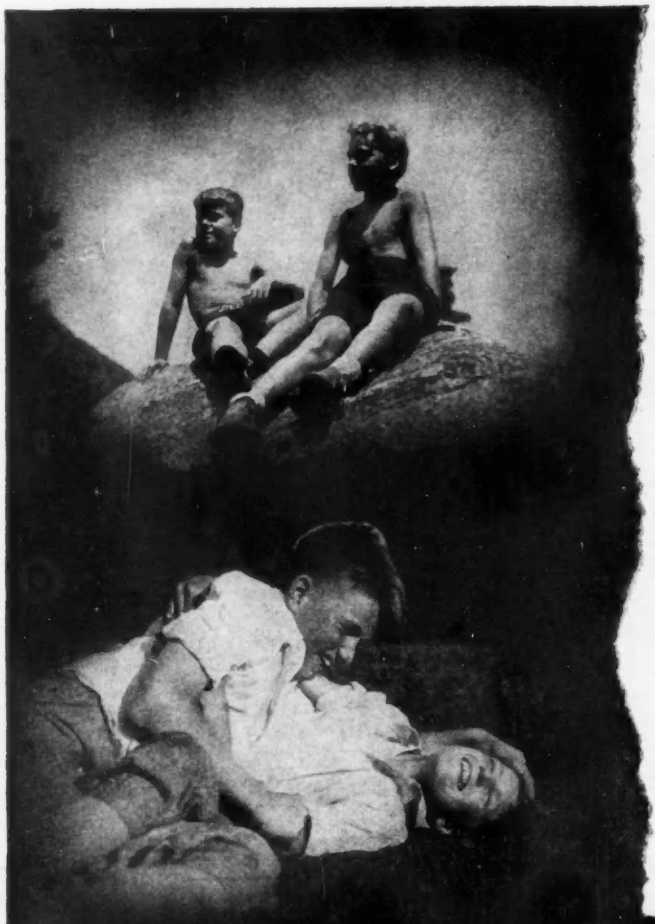
"Then take the man next to him—that's Corporal Jack Davidson, from Kerns, Utah. Two months ago he was stricken with osteomyelitis of the skull, with a brain abscess caused by a sinus infection. For days he lay in a coma at death's door, then he was brought here and operated on. Now he is so far recovered that it won't be long until he will be leaving to return to active duty."

Before we left the room the nurse told me about the third chap playing cards at the table, Private First Class Ambrose Kerr of Robins Field, Georgia. When he entered the hospital he had a cerebellar tumor, a tumor at the base of the brain, which not only caused him to go completely blind but also was slowly causing loss of control of his legs. The nurse's eyes rested on the man. "To look at him today you'd never know how really sick he's been."

I was told of many other patients who had been helped greatly in this neurosurgical section. There was one young corporal who had a deeply depressed skull fracture which not only caused paralysis of his face on one side but caused his eyes to become crossed and his hearing to become impaired. The surgeon was able in his case to repair the brain covering with pieces of the patient's own broken skull bone and tantalum foil instead of the artificial bones made of plastic lucite which are so often used at this hospital in cases of this kind. Exactly five hours following the corporal's operation he ate his dinner; four days later he took the bus and spent the day in Denver, and three months afterward he was back at his army post on full time duty. I could readily understand why no one today could question that neurosurgery is one of the great achievements of medical science.

Another soldier, Private First Class Eugene Fahl, had an abscess of the brain which was entirely different from most brain abscesses in that it was caused by a fungus, Actinomyces hominis, which grows like a mold instead of like ordinary bacteria. He had convulsions, his hand became paralyzed and he lay in a coma for several weeks. The doctor took the bone out in that section and let the abscess bulge through the drain. It *(Continued on page 294)*

Fitzsimons doctors are shown here using the electroencephalograph, machine which records electrical impulses given off by the brain



WARTIME

JUVENILE DELINQUENCY is discussed at luncheon clubs and at gatherings of parents and teachers. Newspapers and magazines carry articles about it. Courts, police and welfare agencies issue comparative reports on delinquency, which means that only those problems of behavior which are sufficiently serious to warrant police or court interference receive attention. Generally, the war is blamed.

But there is another type of juvenile behavior on which the war and its by-products are having a serious effect. · That is the behavior which does not lead to the police or the courts, but which, nevertheless, has in it the roots of most serious delinquency.

Problems of this kind, presented by children in and out of school, are increasing at an unprecedented rate. Not only are the problems increasing in number, but they are also increasing in seriousness. It is not too much to say that the by-products of the war are having a more serious effect on our children than the war itself.

One of the functions delegated to me by the superintendent of schools is to adjust or solve

PROBLEMS OF CHILDREN

the more serious school behavior problems presented by Chicago children. I am the oracle of the public schools—that is, when school executives and teachers have exhausted their resources in attempts to solve the problems of children, their cases are referred to me.

It is no light undertaking. The problems are approached in a spirit of helpfulness for the child: What is the action which will most benefit the child? It is not always easy to take such action, because many teachers have a desire to inflict retributive punishment on a child if he has been especially annoying. That, however, is not true of school executives, who have a broader outlook on adjusting the child to his school environment.

That problems among school children are on the increase is well indicated by comparing the figures for the school years 1940-41 to 1942-43. The serious problems which came to my office, and for which some solution had to be found, were as follows during that period: 1940-41, 1,862; 1941-42, 2,367; and 1942-43, 3,553. Of these numbers, the following were sufficiently serious to warrant prosecution, as indicated: 1940-41, municipal court 284, juvenile court 416; 1941-42, municipal court 414, juvenile court 537; and 1942-43, municipal court 369, juvenile court 506. The chief probation officer of the juvenile court of Chicago has also reported that the increase in delinquency has grown steadily larger during the past two years. The number of cases of serious behavior maladjustments has also been going up and up, as shown in these statistics.

By FRANK L. BEALS

Century Photos Inc.

These figures not only indicate the increase in the number of children with problems, they also show the greater seriousness of the problems and the involvement of parents, since the municipal court cases are all prosecutions of parents for indifference. However, it may be noted that in spite of the growth in the number of problems, the special schools were more successful in making adjustments in 1942-43 than they were in 1941-42.

In the study and solutions of these problems many agencies are involved. These include the Bureau of Child Study of the Board of Education, with its staff of psychologists, psychiatrists, physicians, speech pathologist and others; the Institute for Juvenile Research, which serves children all over the state; the juvenile court with its Juvenile Detention Home and its large staff of probation officers and social workers; the municipal court with its staff of social workers; the various agencies which are interested in the welfare and protection of children; and, greatest of all, the Bureau of Compulsory Education with its staff of attendance officers. During the school year 1942-43, the 145 truant officers employed made a total of 138,907 visits to homes. They participated in 8,983 conferences involving problem pupils, and they succeeded in enrolling in high schools 1,281 eighth grade graduates who otherwise would have evaded high school. In the total of their investigations, they found that 3,471 pupils who were not in school were at work and another 895 were out of school seeking work. They found that 3,737 children had left the city, and that 5,109 had moved without leaving any address behind.

The social service rendered by these attendance officers included securing shoes and clothing for 1,139 children. A total of 1,599 children were referred to various agencies, and medical aid was secured through hospitals, clinics and other agencies. In order that children might be kept in school the attendance officers secured em- *(Continued on page 296)*

Infancy and early Childhood

By C. W. WYCKOFF

BY THE TIME a baby is 6 weeks old he should be well established on a proper schedule of eating and sleeping. The mother is now accustomed to his constant arm and leg movements and general body wiggling. She knows it is normal for him to keep his arms and legs tightly flexed, or drawn up to his body, and to keep the fists tightly clenched. She knows that he may make queer sounds with his mouth and throat when swallowing; that his breathing when asleep is shallow and may be jerky, and that this is not a sign of impending death but just a normal phenomenon in the newborn; that he may hiccough a great deal, and that this does not indicate gas in his stomach or wrong food or indigestion but is due to the fact that the brand new diaphragm—the muscle between the chest and abdomen—behaves jerkily at first but gradually becomes broken in. The mother also learns that the baby's sneezes do not mean pneumonia but only a sensitive nose lining becoming accustomed to the lint and dust in the air, and that his occasional coughs are caused by saliva trickling down his throat. She is constantly observing every little action and change in action and appearance, often anticipating that which never happens. But her self assurance and composure are gradually established during the first six to eight weeks.

Before the baby arrives, the modern young mother adopts an attitude of self confidence and assurance based on her background of information on child care and management found in numerous books on the subject and learned from afternoon mothers' meetings. This early confidence is augmented by the advice of her highly esteemed and reputable physician.

Soon after the birth of her baby, however, her ideas of maternal care become befogged by random advice from each grandmother, by the careless suggestions of friends visiting during the lying-in period, by the stories her nurse tells about other baby cases, and possibly, too, by vague recollections of her own bringing-up. This psychologic fog of doubt of her maternal ability may trouble her a great deal until she has had the sole care of the infant for a month or so. Then, with a reassuring husband and physician, she acquires more poise. Books or pamphlets should not be consulted too freely during these early weeks or months, as she is likely, in her doubtful mental state, to misconstrue their meaning. She thrives better on spoken words of advice.

For example, only the baby himself knows what the different tones of an infant's cry may mean. The mother can know only that he is objecting to something. There is no such thing as a cross or mean or nervous infant. Every normal infant, when well fed and comfortably cared for, is happy when awake and a good sleeper. A nervous, apprehensive mother or nurse may influence even a normal infant to be fussy by too much handling or examining or just by her disturbed, uncertain mental approach.

The infant's first smile may appear at 4 weeks, but this is not a knowing smile; it is probably a reflex action of the facial muscles from some local cause. However, at 6 to 8 weeks an intentional smile will appear, and the baby will start making "cooing" or "ahing" sounds. At the age of 4 months, a loud, jolly laugh is accomplished, and this marks the real beginning of a new personality in the home. This is his first intelligent responsiveness—the first sign of his personality development.

So that you may be more familiar with the young infant's muscle control and know what to expect of him, its development should be considered in detail. Muscle control starts at the head and gradually extends down the body to the legs and feet. Control starts first in the muscles of the face, manifested in the smile at 4 weeks; then the muscles of the throat and vocal cords, shown in the sounds made at

6 weeks. Next comes control of the neck muscles to hold up the head. Even the infant of 3 or 4 weeks can often hold its head up off the bed when placed on its abdomen. The muscles at the back of the neck are stronger than those in front—probably due to the fact that in man's early development he went about on all fours like other animals and thus required stronger muscles in the back of the neck to keep the head up. When the 2 or 3 month old infant is held upright, the head wobbles and jerks and must be always supported, but by the age of 4 months the front muscles are stronger and he is able to hold the head erect. At the age of 3 months, the arms start making purposeful movements. At 4 and 5 months, the baby starts to control his back muscles, so that he is sitting erect alone by 6 to 8 months. The next control permits the infant to raise the pelvis off the bed and to get up on hands and knees at 8 months. At 10 to 12 months, he is pulling himself up to a standing position, having finally acquired control of his leg and feet muscles. Actually, none of these accomplishments is due as much to muscle development as to development of the nerve centers and the nerve communications to these muscles.

As this nerve-muscle developmental plan progresses, there is also taking place a gradual unfolding of mental development in the tiny human being. He starts to weave himself into our social fabric by the slow achievement of two entirely different functions. First, he grows in his ability to visualize and comprehend the world through his five senses; second, he grows rapidly in his ability to act. Notwithstanding the fact that many features of the infant's management have tended to make his early months easier for him, there are some circumstances which even in his early weeks of life will clash with his natural progress and will even order the manner in which his body functions perform. They will dictate his modes of eating, sleeping, intestinal elimination and urinary control, and, worse yet, they will order the time when he may cry. From the beginning he is gently but firmly made to conform. As a rule, the mother succeeds sufficiently so that by the age of 2 years this wholly self-centered, wild, little human animal really does slip into his notch as a responsive member of our civilization.

Many a mother thinks that her infant has been trained to acceptable habits and behavior. What has really occurred is that the infant has merely developed further and has quietly changed from a lower to a higher stage of physical and mental control. The mother's efforts have mainly accomplished the end of occupying her time; she has had but small influence on the infant's habits. He has just grown up.

You must understand that these various developmental stages do not occur at the same time in all normal infants. The ages mentioned here have been found by Dr. Gesell and co-workers of the Yale University Medical School, after examining hundreds of normal infants over a period of several years, to be the average ages of the normal infant's developmental schedule. An infant may be perfectly normal and yet be a month early or a month or two late in all these accomplishments.

Then, too, we must consider the factors which are frequently unavoidable causes of retarded development but which are for the most part remediable and will permit the child to arrive at the normal level as late as two and a half or three years. Some of these retarding causes are nutritional—for example, breast milk may be lacking and it may take several months before a proper food is found; then there is food allergy, which so often is a serious handicap from the moment the infant is born. There is often a faulty calcium absorption from the food, causing slow bone growth, soft muscles and often slowing up the proper nerve-muscle control and the mental processes. Also, there may be a temporary deficiency in the internal secretions of important glands in the body which have a tremendous influence over growth and development, including the thyroid, the pituitary and others. Then, too, there is the premature infant, or the infant born from a mother afflicted with puerperal toxemia—which is a kidney condition, or the infant who suffers from a prolonged and difficult labor. The infant who is neglected, not getting proper attention and care, may develop slowly, and there are still other remediable factors of retarded development. These infants are really normal at term. The brain and the nervous system are all set and ready to go; the organs, the bones and the muscles are ready to do their part, but one of these many little obstacles to normal development may occur, and *(Continued on page 308)*

Fighting DEATH on Wings

By BERTON BRALEY

ON A FRONT that runs from the southern Mexican border to the bottom edge of Brazil, Brig. Gen. George C. Dunham fights most multitudinous and deadliest of man's enemies—bugs.

The sheer scope of this conflict and the immensity of the area in which it is waged place General Dunham as the greatest bug-hunter in history.

The gambia and anopheles mosquitoes—vectors, or carriers, of malaria—are his most important quarries, but General Dunham and his staff of physicians, bacteriologists and sanitary engineers and his troops of ditch diggers and field workers armed with picks, shovels and spray guns also pursue and exterminate the stegomia, vector of yellow fever, and the flies, fleas, lice and ticks which spread a dozen other diseases and malignant infections in cities and jungles.

The General commands the largest and most widely dispersed army that ever went forth to battle with winged and crawling pests. What Walter Reed, Carlos Finlay and George Gorgas did in ridding Cuba, Panama, Venezuela and Ecuador of yellow fever at the turn of the century, this army doctor is doing with malaria and yellow fever, on a vastly greater scale, in fourteen of the Central and South American republics.

For this tremendous campaign General Dunham, as Chief of the Division of Health and Sanitation of the Office of Inter-American Affairs, is backed by a fund of $25,000,000 to finance a two year program.

No one could be better equipped to direct this project. When Nelson Rockefeller was contemplating the organization of the health and sanitation division, as provided by the Rio Conference of January 1942, there was unanimity among the medical authorities, military and civilian, whom he consulted, that "Dunham's your man."

The General had then been working for several months on a great health project in Brazil, at the invitation of President Vargas. Earlier in 1941 the United States Army had sent him to Colombia and Ecuador to survey the field for military preventive medicine in those regions.

He had been preeminent in that kind of job for nearly three decades. Practically all his professional career had been devoted to the study and practice of preventive medicine. That is another way of saying that General Dunham has been a bug hunter, for preventive medicine is the science of stopping disease before it gets started, and that means exterminating bugs, whether they are visible insects or invisible germs.

He not only practiced bug hunting, but he also taught it in the Army Medical School and wrote a book about it that is a sort of bible for bug hunters, civilian and military, all over the world. The book is "Military Preventive Medicine." Aside from going into three editions, which is best seller stuff for a medical treatise, Dr. Dunham's work has a great and unique distinction. When Chang Kai Shek, a few months ago, wanted the ultimate authority on fighting epidemics and infections among the Chinese, the text of General Dunham's book was microfilmed and rushed to China by plane. There the film was translated into Chinese for the use of physicians and sanitation men in battling the diseases that cause nine tenths of the casualties in China's armies.

General Dunham is big framed, hard fleshed and six feet two. He has a square hewn face, leather brown from the tropic sun. The corners of his brown eyes are wrinkled from gazing across hot distances. His smile is genuine and cordial and his voice is rich and deep.

He has been an army doctor for twenty-seven years. He received his M.D. at the University of Oregon in 1914 and his M.A. at George Washington University in 1915, and he joined the Army Medical Corps in 1916.

While in the Army he earned the degree of

Doctor of Public Health at Johns Hopkins; he graduated from the London School of Tropical Medicine and from the Army Medical School. He also has the award of Diplomate in tropical medicine and hygiene from the Conjoint Board of England.

But his experience is even more impressive than his degrees. From 1917 to 1919 he was commanding officer of U. S. Army Hospitals. From 1922 to 1925 he was chief of the department of preventive medicine of the Surgeon General's Office; from 1926 to 1930, director of the department of preventive medicine in the Medical Field Service School; from 1931 to 1935, advisor on public health to the Governor General of the Philippine Islands; and he was director of preventive medicine in the Army Medical School from 1936 to 1939, when he became head of the School.

His military rank kept pace with his medical responsibilities. He entered the army as a first lieutenant in the medical corps, jumped to major in 1918, became lieutenant colonel in 1937 and colonel in 1941. His elevation to brigadier general occurred soon after he assumed his present position.

As a logical consequence of his medical and scientific achievements, General Dunham is a member of the American Society of Tropical Medicine, the American Society of Bacteriologists and the Association of Military Surgeons; he is a fellow of the American Medical Association, the Public Health Association, the American College of Physicians and the American Academy of Tropical Medicine.

But General Dunham's work has been much more than administrative and textual. During his twenty-five years with the Army he saw active service in fighting disease on many plague fronts. He was in charge of the fight against the cholera epidemic in the Philippines from 1932 to 1934, and either in the American Army or on loan to other governments he has conducted campaigns against malaria, cholera and bubonic plague in China, Java and the West Indies. He is as jungle wise as an East Indian game-beater, as swamp wise as a Seminole Indian. He needs to be, for it is in swamps and jungles that the front line trenches of his health army are dug. "Trenches" is not merely a metaphor, for the drainage of marshes and stagnant pools is one of the basic operations of the war against malaria.

That disease is the major enemy against which General Dunham and his army of 5,600 bug hunters are contending now. And these are but a vanguard. The main troops haven't yet moved up. War has made the campaign against malaria the most immediate and urgent of health projects. Rubber, fibers, oils, minerals and drug plants are strategic materials. The jungles, the fields and the mines of Central and South America are sources of many of these materials which formerly came from the Far East. But the areas from which many of these come now is malaria ridden. The quickest source of rubber, for example, is the millions of rubber trees of the Amazon valley, and that is a vast region—greater than the United States. To harvest the 50,000 tons of rubber it is planned to obtain from that region in 1944 will require at least 50,000 workers. It is to protect these workers from malaria that General Dunham's camps are pushing into the farthest reaches of morass and jungle in this vast territory. It is not a philanthropic gesture, it is a matter of production. Sick workers don't produce.

What kind of country the scouts of General Dunham's army are penetrating in the establishment of fronts against malaria is revealed in a report by Dr. E. H. Payne, Chief of the Bolivian unit under Dr. Dunham. Describing the work of the unit in some of the upper Amazon country, Dr. Payne writes, "Activities are not limited to advanced centers where travel is easy and living conditions are the best, but includes health and sanitation programs in the most primitive conditions. The burden of traffic is carried by launches, canoes and mules. Rafts of balsa wood, which are wrecked occasionally, are used on the dangerous upper tributaries of the Beni-Bopi and Caraico Rivers, where the numerous rapids and falls preclude the use of ordinary craft.

"Yellow fever and typhoid inoculations must be given to persons entering this region, and it is essential to carry drugs for malaria and amebic dysentery. It is necessary to check repeatedly sources of drinking water, mosquito nets, clothing and food supply, and people must protect their bodies against bot flies, mosquitoes, merivi, jejune and other biting and sucking insects. Travelers are warned to avoid dangerous sting rays, electric eels, cayman, snakes and paranhas (cannibal fish). Although heavily booted, travelers should watch for blind worms, bunta ants, wasps, and avoid touching hairy larvae and piny plants. The entire body should be searched for ticks and other parasites every night and oftener if possible."

That isn't just one piece of the jungle that General Dunham's scouts have to survey, it's what they encounter nearly anywhere they go. And in those wildernesses they find a population in which as many as 80 per cent are infected with malaria—either latent or active—sick people who can never work at more than 75 per cent of effi- *(Continued on page 290)*

THE DEVELOPMENT OF PENICILLIN

in Medicine

By H. W. FLOREY and E. CHAIN

DISCOVERY of the chemotherapeutic effects of penicillin has excited widespread comment in the lay as well as the medical press. A first hand account of how this substance was introduced into medicine may, therefore, be of interest to readers of HYGEIA.

The phenomenon of the inhibition of the growth of one micro-organism by another has been known for more than sixty years, for Pasteur and Joubert in 1877 noted that anthrax bacilli were prevented from growing when certain other organisms were also present in the culture medium. To them is credited the first suggestion of using this antagonistic property of bacteria for curative purposes.

Since this fundamental observation, many examples of the same phenomenon—called microbial antagonism—have been recorded. In many cases the inhibitory effect of one microbial species to another is due to metabolic products formed by the antagonist. These products have recently been termed "antibiotics."

The earliest attempt to introduce antibiotics into medicine was made by Emmerich and Löw in 1898. They extracted an impure material, which they termed "pyocyanase," from old culture filtrates of *Pseudomonas pyocyanea* and showed that it had the property of causing death, or lysis, of some of the bacteria which can cause disease in man. They recommended pyocyanase for the local treatment of various infectious diseases, but it did not come into general use, although apparently it was on sale in Germany, until at least 1936.

The only other serious attempt to utilize antibacterial products for combating infection in man has been the employment of gramicidin, obtained from cultures of *Bacillus brevis*. This powerful substance was discovered by Dubos in 1939, and although it is far too toxic to inject into the blood stream it can be used for application locally to infected wounds.

In 1929 Alexander Fleming noticed that colonies of staphylococci growing on an agar plate were undergoing lysis in the neighborhood of a contaminating mold colony. Most bacteriologists would have passed this over, but Fleming, an acute observer with a special interest in antiseptics, subcultured the mold for further investigation. From its descendants, all the penicillin in the world was produced until recently.

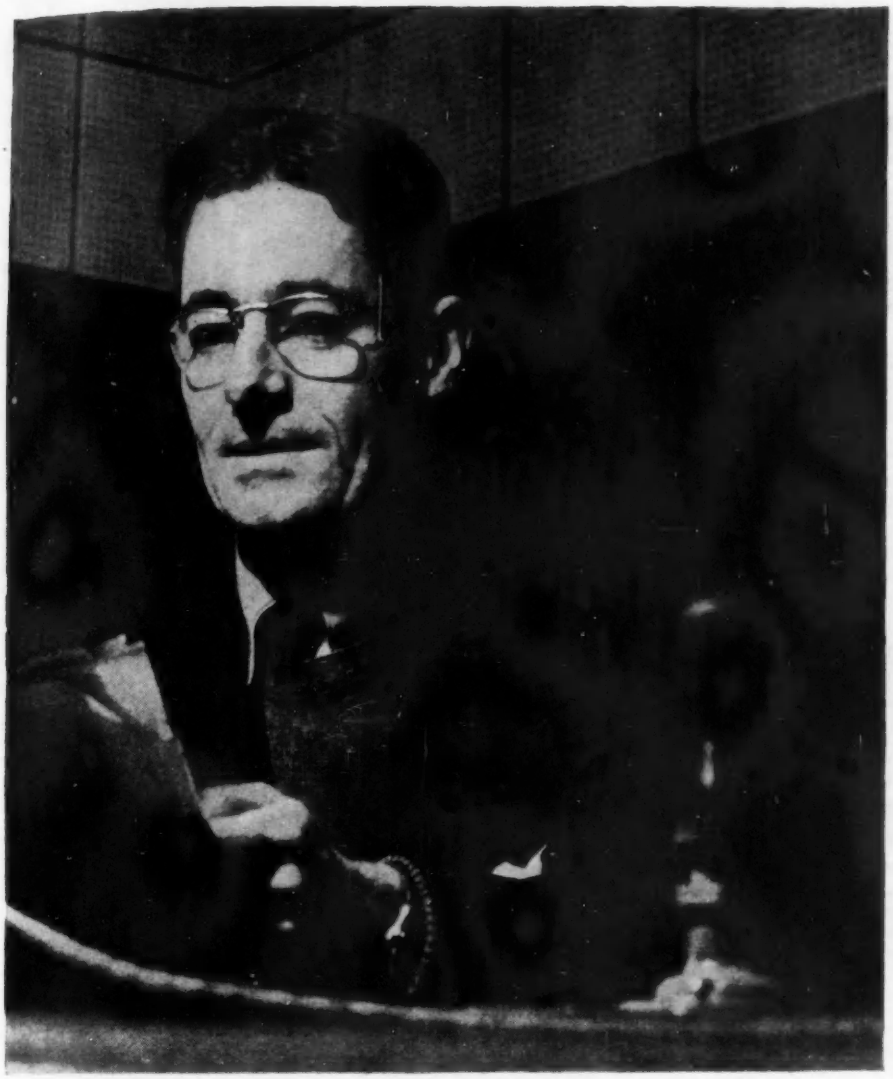
The mold was identified as *Penicillium notatum*. Fleming cultivated it in a liquid medium, peptone broth, and found that it produced in the broth a substance capable of inhibiting the growth of many dangerous germs, even when diluted eight hundred times. The active substance he named penicillin. He noted that broth containing penicillin was not more toxic when injected into rabbits and mice than pure broth and that it did not appear to be harmful to the white cells of the blood.

As a result of this, he suggested that penicillin might be a good antiseptic to apply to septic wounds, and indeed a few cases were so treated. He concluded that it certainly appeared to be superior to dressings containing potent chemicals. The observations, however, were not carried further, though Clutterbuck, Lovell and Raistrick made an attempt to extract the active material. As a result of their work they concluded that penicillin was extremely unstable, and they did not pursue the matter.

In the succeeding years no further interest seems to have been taken in its chemical properties or its possible application to medicine, though Fleming continued to use the crude culture medium in the laboratory as a means of suppressing the growth of certain kinds of bacteria in mixed cultures.

In 1929 one of the present authors, H. W. Florey, started work on the antibacterial substance lysozyme—another discovery of Fleming's. This substance was first discovered in egg white but is widely distributed in nature. It has the power of dissolving or killing certain species of air bacteria, though it has, unfortunately, no effect against bacteria causing disease in man.

The work on lysozyme was carried on until its purification (by Roberts in 1936) and the



One of the authors, Professor H. W. Florey, is shown here reading a paper describing their work in the development of penicillin for use in medicine

elucidation of its mode of action as a carbohydrate splitting enzyme (Meyer and associates, 1936; Epstein and Chain, 1940). During the later part of this work, in 1938, the present writers decided to undertake a systematic investigation of the antibacterial substances produced by bacteria and molds, about whose chemical and biologic properties little was known.

Although the reports suggested that penicillin was an unstable substance, it was among the first chosen for investigation, since it seemed likely to be of considerable biochemical and biologic interest. In particular, it was active against many organisms causing the most destructive lesions in man, including the staphylococcus. Both Fleming and Clutterbuck reported that under suitable conditions penicillin activity was retained in the culture medium for some weeks. This suggested that, if appropriate conditions could be found, the extraction of penicillin from the culture medium and its purification would be possible.

For work of the scope envisaged it was apparent that results would be obtained most quickly by a team of workers, and we have been particularly fortunate in our collaborators. Dr. N. G. Heatley devised a simple and quick quantitative assay method which has proved invaluable in the elaboration of purification processes for penicillin and in similar investigations on other antibiotics. He also designed and constructed the first large scale laboratory plant for growing the mold and extracting penicillin.

Dr. A. G. Sanders of St. Thomas's Hospital, London, later devised and built alternative apparatus for the extraction of penicillin on a larger scale. Professor A. D. Gardner of the Department of Pathology, Oxford, collaborated throughout on the bacteriologic aspects of the work. The biologic investigations were carried out by H. W. Florey in collaboration with Dr. M. A. Jennings of the School of Pathology, Oxford; the chemical and biochemical investigations by E. Chain in collaboration with Dr. E. P. Abraham. The therapeutic trials on man were conducted first by Dr. C. M. Fletcher of Friern Emergency Hospital, London, and later by Dr. M. E. Florey, wife of H. W. Florey, with the help of many physicians and surgeons.

It was established that penicillin was an acid of low molecular weight, which was stable in water. In an acid medium, it was found to be quickly destroyed. It could, however, be extracted by various organic solvents, such as ether, chloroform and amyl acetate, from acid solution and was found *(Continued on page 300)*

X-RAY TECHNICIANS

By
M. G. WESTMORELAND

Torkel Korling

Technician places patient in position for x-ray examination of the lungs. Trained technicians are needed now for hospitals and doctors' offices

AT THIS MOMENT hundreds of women are building careers for themselves as x-ray technicians. They are part of the great corps of workers behind the doctor who make it possible for others to regain their health. Each of these workers knows that what she is doing is vital to the welfare of humanity, helping her community to keep physically fit. Frequently it is part of her job to assist in the early diagnosis of disease. Frequently she aids in giving treatments to check the progress of diseases which otherwise would mean death to the patient. Doing such things means following a career that brings far more compensation than can be measured in dollars and cents.

Consider what the work of the x-ray technician means to individual patients. Marion Harmon was 16 when she was in an accident which resulted in a broken leg. X-ray pictures were most helpful in deciding how the fragments could be set, but after the initial examination was made and while the patient was still anesthetized, more x-ray studies were made. These demonstrated that if the bone healed as it was set there would be a shortening of the leg which would create a decided limp. It is easy to understand what this would have meant to Marion. After the fracture was reset and the leg reexamined through the use of x-rays, the surgeon was convinced that healing would be entirely satisfactory.

Mr. Burke entered the hospital complaining of nervousness and a digestive disturbance. When x-ray films disclosed that he had a beginning ulcer of the stomach, correct treatment was started before much damage had been done. This procedure seems simple and not very dramatic, but the x-ray technician has seen many such patients who have not been fortunate enough to have an early diagnosis. They come to the hospital after several years

of semi-invalidism and after much damage has been done. Sometimes it is necessary to use heroic measures to relieve their suffering.

Early diagnosis of tuberculosis enables many patients to undergo treatment while the disease is in its early stages. This makes it possible for the patients to regain health quickly, before complications have developed.

In order to prove a diagnosis, experts frequently need the assistance of the x-ray department and the x-ray technician. But diagnosis is not the only aim of the x-ray department. Radiation produced by x-ray machines has curative effects on certain diseases which far surpass other types of treatment. Certain serious infections respond to x-ray when other forms of treatment give poor results. Many tumors—and cancer is one kind of tumor—are completely cured by x-ray treatments. The realization that this type of treatment completely cures certain forms of cancer, without leaving grotesque markings, gives the technician a sense of importance.

A number of duties are included in the daily routine of the x-ray technician. Patients must be placed in correct positions so that good pictures can be made of the area where disease is suspected. The machines must be adjusted for the precise amount of penetration desired; exposed films must be developed. When the fluoroscope is used to visualize deep structures in the examination of a patient, the technician adjusts the machine and acts as the physician's nurse. Notes on all examinations and treatments are recorded by the physician, and the technician sees that these are properly filed.

The American Registry of X-Ray Technicians has for years approved certain training programs in order to make available an adequate number of persons qualified to perform this type of work. Entrance requirements of approved schools include at least a high school education or nurses' training. Twelve or more months of instruction and supervised experience are included in the curriculum. Individuals who successfully complete this training and have one year of practical experience are eligible to take the examinations for registration by the American Registry of X-Ray Technicians. Completion of these steps gives the technicians evidence of qualification, permitting the use of "R.T." after their signatures. This is recognized by leading hospitals, clinics and physicians as an indication that the registrant can be entrusted with the various duties commonly expected of a qualified x-ray technician. The American Registry of X-Ray Technicians, which is sponsored by the American College of Radiology, maintains offices at 2909 Raleigh Avenue, Minneapolis 16, Minn.

Recently the American Registry of X-Ray Technicians requested the American Medical Association to assume the responsibilities of inspecting, approving and listing approved schools. Considerable progress has already been made in outlining essentials for approving such training programs. Consultation has been obtained from both the Registry and the American College of Radiology. Undoubtedly similar standards will prevail. However, the minimum essentials must be accepted by the House of Delegates of the American Medical Association before they can be used or published officially. After acceptance the essentials will be printed in *The Journal* of the American Medical Association, probably in one of the June or July issues. Within a month or two after publication, reprints can be obtained free of charge.

Highlights of the training of qualified x-ray technicians include definite instruction in anatomy, physics, chemistry of photography and x-ray technics. Each of these subjects is presented with emphasis on the practical application of the science. Simultaneously the student is taught proper conduct in relation to patients, nurses, physicians and others. The ethics of this profession are thoroughly reviewed so that the student will be able to profit by these ideals. Protective devices are used at all times; consequently the workers in the x-ray department will not absorb too many of the harmful rays.

Definite statements cannot be made for the future needs for x-ray technicians, but at present there are many vacancies in civilian hospitals and physicians' offices. That the demand for x-ray technicians will increase after the war is not doubted by the authorities in this field. Many industries are beginning to install x-ray units in their plants, and this will further augment the need for properly trained workers. Hospitals all over the United States are planning expansion programs which will provide for enlargement of the x-ray department, thereby creating an additional need for technicians.

It is interesting to note that the Army and Navy are training large numbers of enlisted men and women to perform the duties of the x-ray technician. Most of these persons, when the war is over, will return to their former vocations, but many of those who decide to continue in their new profession will find no difficulty in obtaining good positions in federal hospitals. Present indications, then, point toward the fact that graduates of recognized schools for x-ray technicians will find plenty of jobs and will have new opportunities after the war.

LEG EXERCISES

EVERYDAY TASKS DEMAND LEG STRENGTH

IN THE ARMY you'll march, and most routines in civilian life demand leg strength too. Each step you take demands muscle. Not bulky muscle, but lithe, flexible muscle that enables you to take an easy, swinging stride—and keep it up.

The anatomy of leg action may be explained simply. The muscle down the front of the leg is the quadriceps—"quad" for short. Actually, it is composed of four muscles. The quad is the kicking muscle of the leg. It lifts the thighs in front of the body and straightens the knees.

The muscle on the buttocks also has a scientific name—gluteus maximus. It is a naturally strong muscle, but if it is not used it is prone to fatty development. Long periods of sitting tend to weaken it; so does artificial support. Vigorous exercise is necessary to retain this muscle in a normal, vigorous state.

At the rear of the leg is the biceps femoris—part of a group of muscles called the "hamstrings." You feel the stretch in this muscle when you try to touch the ground with your hands while keeping your knees straight. The hamstring muscle pulls the thigh back and causes the knees to bend.

The large muscle on the back of the leg is the gastrocnemius, or calf muscle. Its tendon runs down to the heel and is commonly called the tendon of Achilles. Every time you lift your heel off the ground, with each step you take, you use this important muscle.

Walking, running, jumping, lifting, carrying, and many other everyday activities demand that you have strong legs. Firmly toned legs and buttocks, devoid of excessive fat, are important to attractive appearance.

Planned exercise helps you avoid or lose the excess weight that tends to deposit on the buttocks, thighs, and calves of the legs. At the same time it tones up the muscles so that they have the power to carry you through a hard day.

One more word about marching. When you do it well, you give your feet a healthful workout. But poor control of the legs places an undue strain on the feet. Then pain and fatigue result.

This is the sixth in a series of articles from the WAC Field Manual of Physical Training. Designed to condition women drawn from civilian life for the strenuous physical exertions of WAC service, the exercises presented here will help bring physical fitness to men and women in all walks of life.

—The Editor.

WORK TOWARD EASE AND SMOOTHNESS OF PERFORMANCE IN ALL EXERCISES

PARTNER PUSH-UP. *A* lies on ground, arms under hips, feet stretched up toward partner's shoulders at 45° angle, legs slightly apart (below). *B* places hands and shoulders on *A*'s feet, relaxing so *A* is holding her entire weight. *A* slowly lowers legs by bending knees to chest, then stretches legs back to starting position (next page, top). *B* remains relaxed with weight on *A*'s feet. Repeat exercise until legs become tired.

FULL KNEE BENDS, HANDS ON KNEES. Bend knees to squat position with hands on knees. Use hands on knees to push back to stand.

HALF KNEE BOUNCES. Stand erect with hands placed on hips. Bend knees, keeping body erect. Return almost to a starting position. Repeat rhythmically and with increasing speed so that a bouncing movement is attained. Knees straighten only at the end of the exercise.

FULL KNEE BENDS, HANDS ON FLOOR. Bend knees to squat position touching hands to floor between knees. Rise. Repeat it rhythmically.

JUMPING. Bend knees slightly as in the first picture above. Rise on toes. Repeat rhythmically and with increasing speed until a jump is attained. Work for smoothness of movement then for height in each jump. Use arms to lift body into air. Toes should be pointed when body is in air. Shock of landing should be absorbed by landing on toes and shifting weight to heels and bending knees.

RUNNING. For this exercise arms should be bent to a comfortable position for running. Legs should be lifted as high as hips in front with toes pointed down toward ground. Running time should be gradually increased each day to build up endurance. In an outdoor program running for distance should be substituted. To gain the most benefit, maintain the principles of good posture while running.

SQUAT JUMPING. Stand with either leg slightly in front. Bend knees to squat position. Extend legs forcibly to cause body to rise a few inches off ground in an erect position. Use arms to help lift body into air. From this jump, return to squat position and repeat rhythmically. After the action is mastered increase the height of the jump.

Now, with a fresh eye, study the pictures on these pages once again. What is their one outstanding quality? Right—it is the posture and balance maintained throughout each phase of the exercises. Be sure you also watch your posture as you do these different activities.

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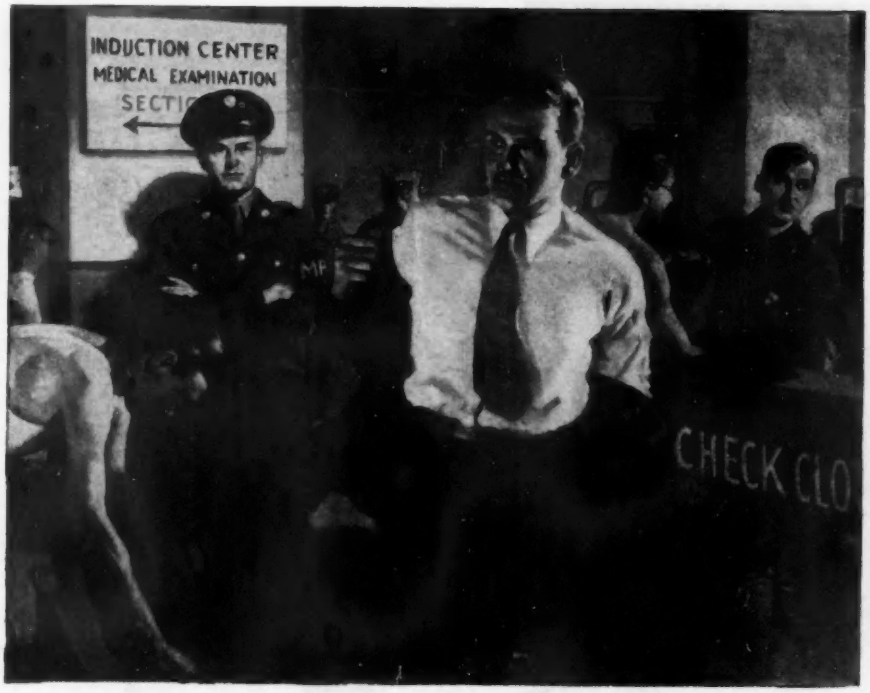

Who'd guess he'd be fighting Tuberculosis—instead of Japs?

NOBODY GUESSED Bob would be turned down. A strong, healthy boy like that!

But the eye of the X-ray saw what human eyes could not see—that Bob had early tuberculosis. Luckily, with the help of a sanatorium he will almost certainly be cured.

What is true of Bob is true of thousands who have tuberculosis—*many don't suspect it.* Yet a tuberculous person may be a danger to his family and associates.

Tuberculosis is contagious. The crowded living and working conditions of wartime are favorable for spreading the germs. And germs find easier victims when general health is low. The best precaution is *keeping fit, plus regular physical examinations including chest X-rays.*

An X-ray of your chest can detect tuberculosis before other symptoms become apparent. The usual symptoms—a persistent cough, chest pains, blood-streaked sputum—may come very late. Then cure may be slow and difficult. Loss of weight, touches of indigestion, a constant tired feeling also may mean tuberculosis.

Unfortunately, State health departments and tuberculosis sanatoriums report that some patients are forsaking health institutions for wartime jobs—gambling away their chances of recovery, and exposing others to infection.

Tuberculosis is dangerous to all ages, but particularly to young adults. Elderly people with coughs, "bronchitis," or "asthma" may have it. If you or members of your family have been in contact with a tuberculous person, see your doctor at once.

Remember *early* tuberculosis can usually be cured. Tremendous progress has been made. Thirty years ago the death rate among wage-earning families was 220 per hundred thousand people. Today it is about 40. On request, Metropolitan will send you a free booklet, 44-Z, entitled, "Tuberculosis."

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The $35,000 Question

(Continued from page 258)

first is a general identity verification form, listing the man's name, the names of his wife and parents, his age, marital status and previous addresses. The second form is somewhat similar and is intended to tie into school records.

On the back of the first form the draft registrant is to give the name of his personal physician and the doctor's address. Despite the care taken in preparing the form, the necessity for the registrants' releases so their physicians can disclose information about their physical condition was overlooked. This omission is being corrected on a local basis.

The general identity cards will be used by the draft boards in the preparation of the first section of a medical and social history record sheet. Then the general identity cards will be put through collective records of state and, in some cases, private mental institutions as a means of uncovering commitment records. Where such records exist and can be used, these cards will also be cleared through social agency exchange indexes, court files and similar types of records of social and behavior problems.

The school identity cards will be sent to the last school attended by each individual draft registrant. The schools will then make out a form for each of these former pupils, detailing the quality of his work, whether or not he was a truant, the degree of his participation in athletics, his attitude toward his teachers, his dependability and whether his classmates accepted, ignored or disliked him.

Even more elaborate digests of information will be prepared by all secondary schools on all male students 15 years of age and over at the time the pupil graduates or leaves the school for other reasons. These will be mailed to the various state directors of Selective Service and will be available for use as the students become of draft age.

Five teachers of each pupil are asked to make out records without consulting one another. In addition to other information requested on former pupils, they are asked to tell,

1943 HYGEIA INDEX

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individually, whether the pupil they are reporting on has been seclusive, moody, suspicious, effeminate, deceptive, markedly nervous, subject to temper tantrums, strikingly immature, a "day dreamer," a "show-off" or otherwise "peculiar." They are also asked to tell whether or not, to their knowledge, each pupil has had asthma or hay fever, tics or twitchings, heart trouble, severe stomach or bowel trouble, fainting fits, convulsions or chronic ill health.

Each of the nation's 6,400 local draft boards is to have the assistance of at least one volunteer medical field agent in completing the medical and social histories on registrants. The Selective Service regulations limit these volunteers to "persons who are educationally trained or occupationally qualified to do health or social work in a public or private social or health agency of recognized standing."

These histories contain five sections: (1) school record, (2) details of the registrant's adjustment to work, (3) his health history, (4) personality or mental disorders, and (5) any history of chronic alcoholism, drug addiction, severe nervous breakdown, mental illness with or without commitment to an institution, epilepsy, or repeated marital or domestic difficulties of members of his family.

The registrants' personal physicians and public agency files will be depended on to supply the bulk of the material gathered by the medical field agents. Present or former employers may be interviewed as it seems necessary.

At first glance it would seem that the mass of material to be gathered on individual registrants from their schools, doctors, and other sources would take the induction station physicians longer to read than is now allowed for the complete medical examination. The Selective Service forms, however, provide for the entering of most information by means of check marks in appropriate columns, permitting rapid gleaning of the information they contain. Once the examining physicians become familiar with the makeup of the forms they will be able to grasp at a glance the information that is of interest to them.

Certainly it will take the psychiatrists far less time to glean the material from these forms than it would to draw more than a hint of the same background from those under examination. Too, the completed forms will no doubt be more accurate than the registrants' own statements on some, if not most, of the information sought. The psychiatrists have given ample and conclusive evidence in the past three years that they can eliminate most of the gross cases of mental unfitness in brief interviews. Now they will have a better chance with the borderline cases that probably never could be uncovered by present induction station procedures alone.

The medical histories also will disclose stomach ulcers, severe head or spinal injuries, asthma and similar defects that now are not discernible by examining physicians in the general physical sections of the induction examination stations. It would obviously be impossible to detect such defects on the basis of the limited time for complete examination allowed at these stations, without the aid of a medical history. With the histories to guide them, the armed forces' examiners may set individual registrants aside for more complete examinations than are given routinely.

Elaborate precautions have been taken to make sure that the material gathered by state Selective Service directors from the schools and by the medical field agents will be held in the strictest confidence. *None of this information will be available at any time to draft board members or other laymen.* The completed forms will be placed in sealed envelopes by the state directors and field agents before being returned to the draft boards for filing with the registrants' other records. These envelopes are addressed to induction station *medical* examiners and will be opened by them only.

Following the examination at the induction station all the forms are to be sent to the proper state Selective Service director by the chief medical examiner at the station. The forms will remain in confidential files at state headquarters unless requested for use by Selective Service medical advisory boards, composed entirely of physicians who volunteer their services to review cases of men rejected at the induction stations. When the medical advisory boards finish with the forms they will return them direct to state headquarters.

Is all of this costly and complicated rigamarole worth while? It certainly seems to be on the basis of three years experience of Selective Service and two years of war. Every unfit man that it keeps out of the armed forces will increase efficiency, cut training costs, stop useless expenditures for shipping unfit men abroad, reduce postwar compensation costs and leave men who would be no use to the military in civilian jobs where they can be of aid—material in many cases—to the war effort.

Just add 1 tablespoon of Brer Rabbit New Orleans Molasses to a glass of cold or warm milk for delicious, iron-rich Brer Rabbit Milk Shake.

Rich in IRON—and makes children love to drink milk!

Even children who dislike plain milk enjoy Brer Rabbit Milk Shake! And it's a delightful way to give them extra iron.

Tests have shown Brer Rabbit Molasses second only to liver as a rich food source of iron. And iron helps build good red blood.

Three tablespoons of Brer Rabbit Molasses will supply about one-third of a child's minimum daily iron requirements based on government standards.

TWO FLAVORS: GOLD LABEL — highest quality, fancy, light molasses. Especially delicious on pancakes, waffles, bread and cereals, and for a *delicately* flavored milk shake. Also fine for baking.

GREEN LABEL — dark and full-flavored. Recommended for cooking and a *richly* flavored milk shake.

ACCEPTED AMERICAN MEDICAL ASSN.

FREE PENICK & FORD, LTD., INC.
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● Send me — free — Brer Rabbit's "Modern Recipes for Modern Living," containing 116 fine molasses recipes. Also pamphlet on children's iron needs.

Name_____
(Print Name and Address)

Address_____

City_____ State_____

Meat SUBSTITUTES

With meat supplies limited, homemakers are seeking to furnish the nutrients commonly found in meat by substituting other dishes

By ESTHER HEINEMAN

"WHAT DO you substitute for meat when all your brown stamps are used?" How often this remark is heard in these unusual days, with meat, butter and cheese rationing following quickly in the footsteps of the rationing of canned goods! To do her share in the war effort, the American homemaker must be adaptable, adjusting herself easily to new deficiencies in the food supply. At the same time she must see that her family gets well balanced meals, that those foods which are rationed are replaced with others of similar food value which are not rationed or which have a low ration point value.

In the last decade the average amount of meat used per person was 2 3/10 pounds to 3 pounds per week. If the homemaker has been in the habit of serving much meat, her greatest problem will be to supplant part of this with wholesome substitutes. Meat is a good source of six main food classifications: protein of good quality, iron, phosphorus; and three of the B vitamins, thiamine, niacin and riboflavin. These food values are necessary for health, and the aim of the homemaker should be to continue supplying them to her family by the use of appropriate meat substitutes.

All these classifications, with the exception of iron, can be derived from the following nonrationed or low point value foods: Poultry, cheese, milk, eggs, fish, dried beans and peas, lentils, cooked soybeans and peanuts. These same foods, with the exception of milk, fish and cheese, are also good sources of iron. To increase the iron and vitamin B content of the diet, it should include more whole grain and enriched cereals and bread. Whole grain cereals contain more than twice the quantity of available iron and B vitamins than enriched flour does. In addition, the whole grain contains other minerals and good protein not found at all in enriched flour. It's safer, therefore, as far as nutrition is concerned, to use the whole grain products entirely. Green, leafy vegetables are also good sources of iron and are not rationed.

Meat is often referred to as a source of "complete" protein. This means that it contains all the known essential amino acids which combine to form the protein of the body. If some of these amino acids are missing in a food, it is called an "incomplete" protein. Any foods, then, which replace meat in the diet should also be complete protein foods. Fish, poultry, game, eggs, milk and cheese fulfil this qualification, but plant protein does not.

The average housewife will want to know just how she can substitute other foods for meat. Of course, she can use poultry more frequently, but perhaps her food budget doesn't permit this luxury often. If the man of the family goes hunting, the game he brings home will furnish a meal or two. Fresh fish is a reasonable and nutritious meat substitute, but the average American family tires of it if it is served too often. The homemaker should not be shy about trying new kinds, however, as many fish considered delicacies in certain parts of the country were not used at all in other sections until rationing brought fish into a position of prominence.

There are times, however, when we wish to use plant protein as a substitute for meat. Since there is no complete plant protein, we must find combinations of plant protein foods which together form a complete protein. Such a combination is baked beans and corn bread. Navy beans are lacking the amino acid cystine, which is found in abundance in corn. Corn lacks the amino acids lycine and tryptophane, but since it contains much cystine, the corn and beans together form a complete protein and are therefore a good meat substitute. Another wholesome substitute is the Indian-

BABY FOOD TEST!

Mothers are discovering that there IS a big difference in baby foods! Before selecting food for their youngsters, thousands of women insist on TASTING it themselves! And most of them prefer Heinz Strained Foods—for these important reasons:

1 **FLAVOR**—These keystone-labeled dishes have a wholesome, inviting flavor even very young infants enjoy!

2 **TEXTURE**—Prepared with scientific skill and homelike care, Heinz Strained Foods are delightfully smooth and full-bodied in texture.

3 **COLOR**—Only the finest, freshest ingredients could give these foods such a natural, tempting color.

Let This 3-WAY TEST Guide Your Choice Of Baby's Strained Carrots!

AS SOON as doctor says baby is ready for strained carrots, for instance, make this important three-way test! Discover why Heinz Strained Carrots—in fact, all 17 Heinz Strained Foods—rate so well with America's mothers. They're made by a company which has devoted seventy-five years to the preparation of quality foods. And they also have these advantages:

1. **VITAMINS AND MINERALS** are preserved in high degree by scientifically cooking finest-grade fruits and vegetables. These are raised by experienced farmers under the close supervision of Heinz experts.

2. **THE MOST MODERN** cooking and vacuum-packing methods have been developed by Heinz laboratory experts and their advisers in the Mellon Institute of Industrial Research.

3. **FURTHER ASSURANCE** of uniform excellence is furnished by constant research work of food chemists in Heinz Quality Control Department.

4. **ALL HEINZ BABY FOODS** on dealers' shelves are dated so they can be checked regularly by Heinz representatives and replaced by fresh stocks if necessary. Quality is controlled from Heinz kitchens to consumer.

17 STRAINED FOODS—1. Vegetable Soup with Cereals and Yeast Concentrate. 2. Beef and Liver Soup. 3. Tomato Soup. 4. Mixed Greens. 5. Spinach. 6. Peas. 7. Beets. 8. Green Beans. 9. Carrots. 10. Asparagus. 11. Mixed Cereal. 12. Prunes with Lemon Juice. 13. Pears and Pineapple. 14. Apricots and Apple Sauce. 15. Apple Sauce. 16. Beef Broth with Beef and Barley. 17. Vegetables and Lamb.

12 JUNIOR FOODS—1. Creamed Diced Vegetables. 2. Chopped Green Beans. 3. Creamed Green Vegetables. 4. Creamed Tomato and Rice. 5. Chopped Spinach. 6. Chicken Farina Vegetable Porridge. 7. Chopped Carrots. 8. Chopped Mixed Vegetables. 9. Lamb and Liver Stew. 10. Pineapple Rice Pudding. 11. Prune Pudding. 12. Apple, Fig and Date Dessert.

HEINZ Baby Foods

DIAGRAM A.
Normal female mind. Notice distribution of interests.

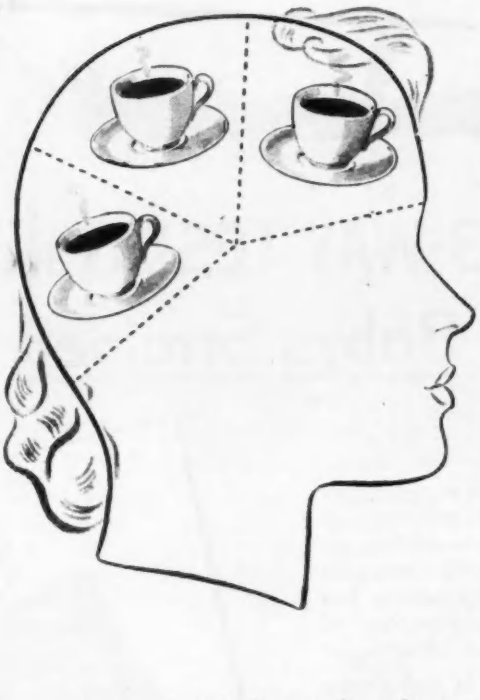

DIAGRAM B.
Female mind after doctor has forbidden coffee. Notice predominance of coffee idea.

Lots of people (male as well as female) are funny that way.

When a doctor finds it advisable to take them off coffee, coffee is all they can think about. Pretty soon, there they go, breaking orders.

That's why many doctors find it a good idea to suggest, "Drink Postum instead."

Postum is a perfectly delicious answer to that craving for a hot and hearty mealtime drink. It's so robust, so rich-flavored, so heart-warming that many people, who *can* drink coffee with no ill effects, actually *prefer* Postum.

Yet Postum contains no caffein, no stimulants, nothing to disturb those people who can't take coffee without penalty.

Those three words, "Drink Postum instead," turn out to be a grand introduction to one of America's great mealtime drinks.

Postum, a product of General Foods, is made of fine American grain roasted to perfection and slightly sweetened.

named succotash, the combination of corn and lima beans.

The protein of legumes is supplemented by the protein of milk. To put this suggestion into practice, cook lentils with a can of evaporated milk and a ham bone. Of course, whole milk may be used if desired. The protein of peas may be supplemented by whole wheat or rye. Although we may not be accustomed to using these combinations as meat substitutes, they fulfil nutritional requirements and are good when properly prepared.

"My family prefers soybeans to any other meat substitute," says a modern homemaker who knows that this vegetable is the best plant substitute for meat. Cooked soybeans and peanuts are our best sources of plant protein. The cooking process breaks up the protein so that it can easily be assimilated by the body. Soybeans may be bought in most grocery stores, and if an increasing number of homemakers demand them, they will be carried by grocers universally. Cooked peanuts have not yet been used as extensively as they eventually will be, in spite of their good protein content.

There are a number of interesting ways to prepare soybeans. One is to bake them exactly like Boston baked beans. Soak over night, parboil, add tomato sauce or puree, molasses, seasoning—catsup if desired—a small piece of salt pork or bacon, and bake covered for six to seven hours, adding moisture, if necessary. Uncover, brown and serve.

The following soybean casserole makes a filling and wholesome meat substitute:

SOYBEAN CASSEROLE

2 cups cooked soybeans, chopped
¼ cup diced salt pork
2 cups chopped celery
2 tablespoons chopped onions
2 tablespoons chopped green pepper
6 tablespoons flour
2 cups milk
1 tablespoon salt
1 cup buttered bread crumbs

Brown the salt pork in a frying pan. Add the celery, onion and green pepper and saute for about 5 minutes. Add thickening made from the flour, milk and salt and stir until it reaches the boiling point. Stir in the cooked beans and pour the mixture into a greased baking dish. Cover with buttered crumbs. Bake in a moderate oven (350° F.) for 30 minutes or until the crumbs are brown.

Soybeans can also be prepared with Chile powder.

SOYBEAN CHILE CON CARNE

2 cups cooked soybeans
¼ pound salt pork, diced
¼ cup chopped onions
½ pound lean beef, ground
2 cups tomatoes (canned or fresh)
1 tablespoon Chile powder

Fry the salt pork until crisp. Remove the pork and brown the onions. Add the beef, stir and cook slowly for 5 minutes. Then add the crisped pork and the remaining ingredients and heat to boiling.

Occasionally a spinach loaf baked with cheese and eggs might substitute for meat. Incidentally, the cheese masks the spinach flavor to such an extent that children who dislike spinach might be encouraged to try it in this disguised form.

CHEESE SPINACH LOAF

2 cups cooked spinach
2 eggs, well beaten
1 cup grated cheese
Seasoning
Bread crumbs
Butter

Combine spinach, eggs, grated cheese and seasonings. Place in buttered casserole, cover with bread crumbs and dot with butter. Bake in a moderate oven 30 to 35 minutes or until the loaf is firm.

Since cheese is rationed, the housewife may not have enough ration points to use it in large quantities, but it can be used with nonrationed eggs in Cheese Fondue or Swiss Eggs.

CHEESE FONDUE

6 eggs
2 cups hot milk
2 cups soft bread crumbs
1 cup cheese grated or sliced thin
1 tablespoon fat
Salt to taste

Beat the eggs well. Mix the milk, bread crumbs, cheese, fat and salt. Stir this mixture into the beaten eggs. Pour into a well greased shallow pan and bake in a moderate oven for about 25 minutes, or until set and lightly browned on top. Serve at once.

SWISS EGGS

Butter a shallow baking dish and into it place 3 tablespoons cream or milk. Sprinkle grated cheese over this, and into it break four eggs. Sprinkle top with more grated cheese, salt and pepper and bake in a moderate oven (350° F.) until firm (about 25 minutes).

Creamed canned salmon or tuna fish will serve more people if hard cooked eggs are chopped and combined with the creamed mixture. If there are no ration points left for that can of salmon, it is possible to buy fresh salmon, cook, skin and bone it, flake the fish and use as canned salmon. Using the fresh salmon also reduces the cost of the salmon to less than half that of the canned variety. Since this salmon is inclined to be dry it will be necessary to use more shortening in its preparation.

For the family which still prefers meat to any substitutes, the following suggestions might be used to make the meat flavor go further:

1. Serve stew in the form of meat pies, as a filling for hot biscuits, scalloped with macaroni or spaghetti, or topped with dumplings.
2. Use cereal as a filler for meat

Cover Girl!

But no hiding the fact that she *eats* her milk, too

A girl's got to have her reservations!

But one thing she'll broadcast—high, wide and handsome. It's *smart* to grow up on Carnation! Drinking it . . . "eating" it.

It doesn't take an expert to spot Carnation youngsters. High spirits . . . rosy cheeks . . . robust bodies . . . and strong, sound teeth tell their own story. A big help toward all this is "eating" your milk, too. "Eating" it in cooked dishes that taste simply wonderful and are packed with nourishment besides.

It works like this. No matter how you use it, Carnation is fine whole cow's milk with *all* the milk nutrients. Nothing's taken out but part of the natural water. And there's extra enrichment with "sunshine" vitamin D—through irradiation.

Then of course there's Carnation's economy and convenience. And, thanks to homogenization, there's the distributed richness of butterfat that's the very thing to make ordinary cooking taste inspired. All for one brown ration point per big tall can!

Free for the asking is a new, timely book of milk-rich recipes, to start you off on this easy way of getting more milk into meals. Send for it today.

FREE! "CLEVER WAYS WITH CARNATION . . . for the Duration." Your easy way to make the most of every can of Carnation to take care of the family's needs. A brand new collection of delicious, timely recipes featuring Carnation's use in the Government's 7 Basic Food Groups. For your copy address Carnation Company, Dept. 702B, Milwaukee 2, Wis., or Toronto, Ont., Canada.

TUNE IN THE CARNATION "CONTENTED HOUR," MONDAY EVENINGS, NBC NETWORK

IRRADIATED
Carnation Milk

"FROM CONTENTED COWS"

As you read this, the sunshine of Hawaii is ripening countless pineapples on the great Dole plantations.

Although we expect a fine harvest, we can't promise you all the Dole Pineapple Juice you would like to have. You know the reason—a generous percentage of the 1944 pack is going to our Armed Forces. However, we can promise you this —

Your grocer should have frequent supplies of Dole Pineapple Juice because continuous shipments are expected from Hawaii. Furthermore, every can of Dole Pineapple Juice you buy will have the same fine, uniform quality that it had in prewar days. Dole Pineapple Juice is still the true, undiluted juice of sun-ripened pineapples.

May we remind you that every 6 ounce glass of Dole Pineapple Juice you drink contains 1/5 the amount of Vitamin B_1 and 1/6 the amount of Vitamin C recommended for the average, moderately active adult. For children these percentages are higher varying with age. Dole Pineapple Juice is also high in quickly assimilated food energy and contains minerals which give alkaline reaction in the body.

You'll find that the rotation of Dole Pineapple Juice with other true fruit juices in the diet makes for pleasing variety. And the convenience of Dole is obvious—just shake the can . . . "punch and pour." In these strenuous days, such time-saving means a lot.

DOLE HAWAIIAN PINEAPPLE PRODUCTS

loaves or hamburger. Rolled oats is especially good in meat loaf, as it makes the meat loaf less compact than when bread is used.

3. Combine well seasoned raw meat with boiled rice or mashed potatoes. Bind with white sauce and use for patties, croquets or meat loaf. This same type of mixture may be used to stuff peppers, tomatoes, eggplant or onions. Patties made of the meat combination, wrapped in cabbage leaves and baked are delicious. This is another of the many forms of "Pigs in Blanket."

4. Toast bread on one side. Spread untoasted side with fat, sprinkle with salt and pepper and cover with ground raw beef. Broil until done as desired.

5. Grind a small, raw, pork roast through the medium blade of the meat grinder. Add barley to a large amount of boiling salted water. Then add the ground pork and cook for several hours. Several bay leaves and whole black peppers added to this dish at the beginning of the cooking period give a good flavor. This combination is called "Kip."

6. Brown ground raw meat, season with onions, peppers, tomatoes and serve over macaroni, spaghetti, rice or potatoes.

7. Instead of using dressing only for poultry, try it with a boned roast, spareribs sections or other type of baked meat. Vary the dressing by using raisins in it one time, apples the next.

8. Instead of using cheese in the recipe for Fondue given above, use ground cooked meat, soy or other beans or vegetables, and bake.

9. Put alternate layers of sliced cabbage, apples and cooked ground beef in a casserole. Cover top with bread crumbs, dot with shortening and bake.

10. Scallop browned slices of liver with alternate layers of potato slices and a little onion. Cover with milk and bake until potatoes are tender.

11. Cut meat from the bones of chicken, roasts and chops and use the bones for nourishing and delicious soups.

12. Leftover cooked meats can be used for hash and meat pies or combined with vegetables for a salad. If a lunch must be packed for some member of the family the ground leftover meat, combined with salad dressing, pickles and celery, makes a delicious filler for sandwiches.

Meat and all meat substitutes are protein foods and should be cooked with moderate heat. Too much heat toughens the protein and will destroy some of the vitamins found in these protein rich foods.

For Blood Donors

a diet adequate in every nutritional essential and particularly rich in proteins of highest quality and iron, is imperative in order to assure speedy blood regeneration. * The proteins of meat are of highest quality, of the RIGHT KIND not only for blood regeneration but also for every other protein need.

*Concerned with the welfare of the large number of donors who are giving their blood to make life-saving plasma available for our armed forces, Drs. McKibbin and Stare of Harvard University after a searching study reported in the May 1943 issue of the Journal of the American Dietetic Association: "The removal of 500 ml. of normal blood involves the loss of about 100 Gm. protein. To replace this loss, dietary protein must be consumed well in excess of the amount required to maintain the other body tissues. . . . From these studies the conclusion may be drawn that biologically complete proteins are generally the best hemoglobin builders."

ACCEPTED AMERICAN MEDICAL ASSN. Council on Foods

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

AMERICAN MEAT INSTITUTE

MAIN OFFICE, CHICAGO . . . MEMBERS THROUGHOUT THE UNITED STATES

Fighting Death on Wings

(*Continued from page 273*)

ciency. That is the purely commercial aspect of a disease that causes untold suffering and death.

Malaria is the chief foe, but there are others almost as widespread and even more deadly. Tuberculosis takes terrific toll of lives throughout Latin America, particularly in urban communities; amebic dysentery and blackwater fever are enemies that lurk in the jungles; typhoid and typhus are ever present dangers; and there is always the threat of bubonic plague and yellow fever. Venereal disease is another major ill to be combated, and there are strange and hideous tropical diseases like yaws and elephantiasis, Chagas disease, which burns out heart, liver and spleen, or Oyoya fever, a fly-borne infection that kills overnight.

Fighting the bugs and microbes which spread these infections is much more than a medical job.

"What's of first importance in the work of preventive medicine," General Dunham says, "is health education—not merely for nurses and doctors, but for the people. Sanitation measures are a close second—but if you don't educate people as to the need of sanitation your work is wasted.

"Hospitalization, surgery and medicine, though essential, of course, are alleviations, not preventives. For that reason more of our job is done in the classroom than in the consulting room, and the tools of our work are more often the pick and shovel and the exterminator's spray than the syringe and the scalpel.

"You can do more for the health of a community by getting people to live fewer to a room than by adding more beds to a hospital. You do more to conquer tuberculosis by increasing the food supply than by building more sanitariums. That is why we work so much in liaison with the agricultural and economic experts throughout the regions where our bug hunting goes on."

So, in addition to physicians, pharmacists, sanitary engineers and nurses, the staff of General Dunham's army comprises dietitians, teachers, architects and economists. It works in alliance with inter-American economic and agricultural authorities concerned with enlarging the production of food, improving housing and bettering living and working conditions. It should be emphasized that the United States is not playing Lord Bountiful to Latin America in these activities. Men, money and supplies furnished by the United States are supplemented, often man for man and dollar for dollar, by the contributions of the other republics.

In the case of General Dunham's division of health and sanitation, though the technical staff is largely from the United States, the construction men, drainage crews and field troops who fight mosquitoes with oil spreaders, tree sprays, cyanogas and even flame throwers, are natives. And the communities in which these bug hunters do their work are bearing their share of the cost. Also their own health organizations are manning many sectors of the front against disease. As a matter of fact, South and Central America spends a larger proportion of its income in health and sanitation measures than does the United States.

In other words, though General Dunham commands the greatest single army of bug hunters, his troops hold only a part of the far-flung battle line. But their portion of the job is big enough to be a major campaign. It covers, today, fourteen countries—Brazil, Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Panama, Uruguay, Paraguay and Peru. Eventually it is planned to include all of Latin America. In each country where General Dunham's army is stationed, it is there by invitation of the government and works in liaison with the local authorities.

The division of health and sanitation carries on a short and a long range campaign. The war emergency work is that of draining swamps, oiling stagnant waters, drilling wells, building tropical health centers and otherwise providing for the immediate needs of labor employed in the production of rubber and other strategic materials. But nursing schools, modern hospitals and extensive sewage systems are a permanent foundation for health.

On the wall of General Dunham's office in the Commerce Building at Washington is a huge map of Central and South America, speckled with varicolored pins. There are several hundreds of these, sometimes as thickly clustered as the insects that are being fought, sometimes scattered thinly over wide spaces of territory. Each pin represents a unit of the bug hunters' army. Blue pins show building projects—hospitals, dormitories, sanitation plants. Black pins represent sanitary engineering projects, sewage plants, water supply stations, drainage ditches. Red pins stand for medical units for treatment of disease. Green pins mean projects for health education, and brown pins show the launches used by doctors, sanitary engineers and other personnel in reaching the more distant points of this vast health front.

The pins go marching down the map through Guatemala, Honduras, Nicaragua and Costa Rica and then continue down through Ecuador, Colombia, Chile, Bolivia and Paraguay. On the other side of the continent the pins, starting near the shores of Brazil, progress westward almost to the Andes. Every one of these pins represents a spot at which the fight against disease is going on actively. Some of them stand for projects employing several doctors, sanitary engineers and nurses, with much heavy equipment of hospitals, dispensaries and administrative plants. Other pins—notably the brown ones—mean a lightly equipped, mobile unit moving on patrol into the wilderness.

General Dunham doesn't spend much of his time surveying that pin-decorated map. On the average he is nine weeks "on the road," to and from the spots marked by those pins, for each week he is in Washington. By air, water and mule he has covered more than 75,000 miles in Latin America since he assumed command of his health army.

Even when he does come back to Washington from the upper or lower Amazon, with side trips to Chile and a few stops in Costa Rica and Guatemala, his office sees little of him. An administrator in the Leonard Wood tradition, he has an able staff in charge of the machinery of organization. That staff keeps the wheels turning smoothly while the General confers on policies with the State, War, Commerce and other departments which are concerned with Inter-American activities. He also has business with Congressional committees which want to know what he is doing with the $25,000,000 he has to spend, and why. The General knows, and he tells them. He can always report large accomplishments, because he gets things done.

He has a quietly genial manner, a warm smile and an engagingly persuasive personality. He expects results, however, and when diplomacy and sweet reasonableness prove inadequate, General Dunham knows how to get tough. He has a reputation for being one of the

THEY'RE GROWING UP...

and growth is a function of nutrition

HORLICK'S, because it provides the basic nutritional elements needed to satisfy the heavy demands of growth and energy expenditure, is a valuable supplementary food for the pre-school and school child.

Prepared with milk or with water, it is convenient, palatable, easily digested. Ideal for between-meals and at-meals nourishment.

Children who do not like or who tire of plain cow's milk often take readily to Horlick's.

Use

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The *Complete* Malted Milk—
Not Just a Flavoring for Milk

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HORLICK'S

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U. S. PAT. NO. 2,218,277
BRASSIERES
"THE LIFT THAT NEVER LETS YOU DOWN"

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Whether you wish to regain or maintain a smart, youthful bust line, PERMA☆LIFT flatters the flat and firm alike. The miracle happens at the base of the bra-cups, where a secretly processed cushion inset softly but firmly supports your bosom, holds a rounded contour, never becomes limp or lax through constant washing and wear. Brassiere and Bandeau styles, $1.25 to $2.50. Long-Line models, $2 and $2.50.

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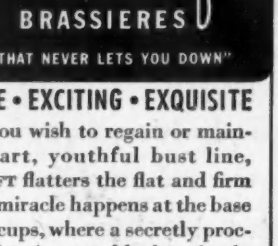

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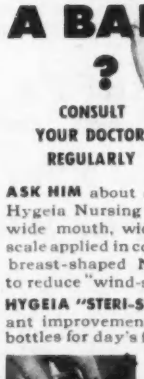
ASK HIM about the advantages of improved Hygeia Nursing Bottle with easy-to-clean wide mouth, wide base to prevent tipping, scale applied in color for easy reading. Famous breast-shaped Nipple has patented air vent to reduce "wind-sucking."

HYGEIA "STERI-SEAL" CAP—Another important improvement. Prepare formula and fill bottles for day's feeding. Then attach Hygeia "Steri-Seal" Cap (see arrow in picture), and nipples and formula are protected until feeding time.



Ask your druggist for Hygeia equipment today.

HELP WIN THE WAR by conserving rubber. Use a separate nipple for each feeding. Clean immediately after use. Avoid excessive boiling.

HYGEIA
NURSING BOTTLES & NIPPLES

most expert red tape cutters in government service, and when he starts something he follows through. Incidentally, General Dunham's health and sanitation division is particularly distinguished for knowing definitely what it is doing and having available the definite facts about it.

Because the two million square miles of the Amazon valley are the richest sources of rubber, vegetable oils and other strategic materials, it is in this region—most of it jungle—that the biggest work of General Dunham's army is being done. The ancient city of Belem is the gateway to this empire. Belem, 90 miles from the Atlantic, at the confluence of the Para River and the Amazon, is a city of 300,000, and it is the assembly point for labor bound up the Amazon basin.

At Belem 500 men of General Dunham's corps are constructing a great sanitation project, building dykes and tidegates, cleaning out streams, insuring a pure water supply and draining malarial swamps. Belem is also the site of a laboratory for studying mosquito specimens—and there are hundreds of different breeds, none of them kind hearted—that the bug hunters' army may deal with in the field.

From Belem inward for more than 2,200 miles will extend a chain of health centers, dispensaries, hospitals and floating clinics for the war on malaria, dysentery, typhoid, typhus and jungle fevers. Making ready for these, patrols have already covered most of the region in launches, equipped as floating dispensaries for atabrine, quinine and other drugs, including "shots" for yellow fever and typhoid. By canoe, mule back and afoot, other scouts of the health army are surveying trails for projects yet to come. Nor is all this merely projective. Many of the health centers, several of the hospitals and a large number of sanitation units are built and operating. At Manaos is a secondary headquarters of the health army, 1,000 miles up the Amazon, and the supply lines and health depots of the army are extending all the way to Iquitos and Tingo Maria, on the eastern slope of the Andes in Peru.

Second in extent to the Amazon valley campaign is that in Ecuador, where a million and a half dollars' worth of projects are finished or under way and about 1,600 people are directly employed. In Quito a modern nursing school is in operation, a 100 bed hospital for infectious diseases and a 200 bed maternity hospital are under construction. In Quito and in Guayaquil the program for other hospitals, laboratories, dispensaries, health centers and large scale sanitation is taking shape. These are bases from which General Dunham's health troops can carry the attack on disease out into the country. Ecuador was one of the first countries to cooperate on the Dunham projects. Its strategic importance as a Pacific Coast bastion on the approaches to the Panama Canal is not least of the reasons.

Haiti, where the production of rubber through the cultivation of the cryptostegia plant is a major plan, is at present third in the number of people employed and extent of projects operating. Altogether the division of health and sanitation has so far expended or is about to spend $8,000,000 in the fourteen countries of South and Central America and has allocated another $8,000,000 for future health projects. The rest of the $25,000,000 is in reserve for still longer range campaigns.

Up to now, fifty-six projects have been completed and are operating. Some of these, in the larger communities, might be called "medical strong points" protecting the lives of 300,000 people. Others are outposts that affect small communities of three or four hundred. But the totals run high in the millions, and when the 166 projects now under way are operating, the numbers protected by these defense lines of health will increase proportionately. In the blueprint stage are 285 more redoubts that will eventually be manned against the enemy—disease.

Most of these units are headed by a physician, with a sanitary engineer as aide. Nearly all of these are from the United States, but they work in liaison with much larger staffs of local physicians and they use local labor, either directly or under contract, in construction and field operations. In El Salvador, for example, a project employing 400 people has only four men from the United States. There is a double purpose in this. Using local labor creates good will, and it educates the people employed in the practical application of health measures.

The best picture of the field activities of General Dunham's widespread army is found in the fortnightly reports from the various fronts. Here is a summary of a few reports:

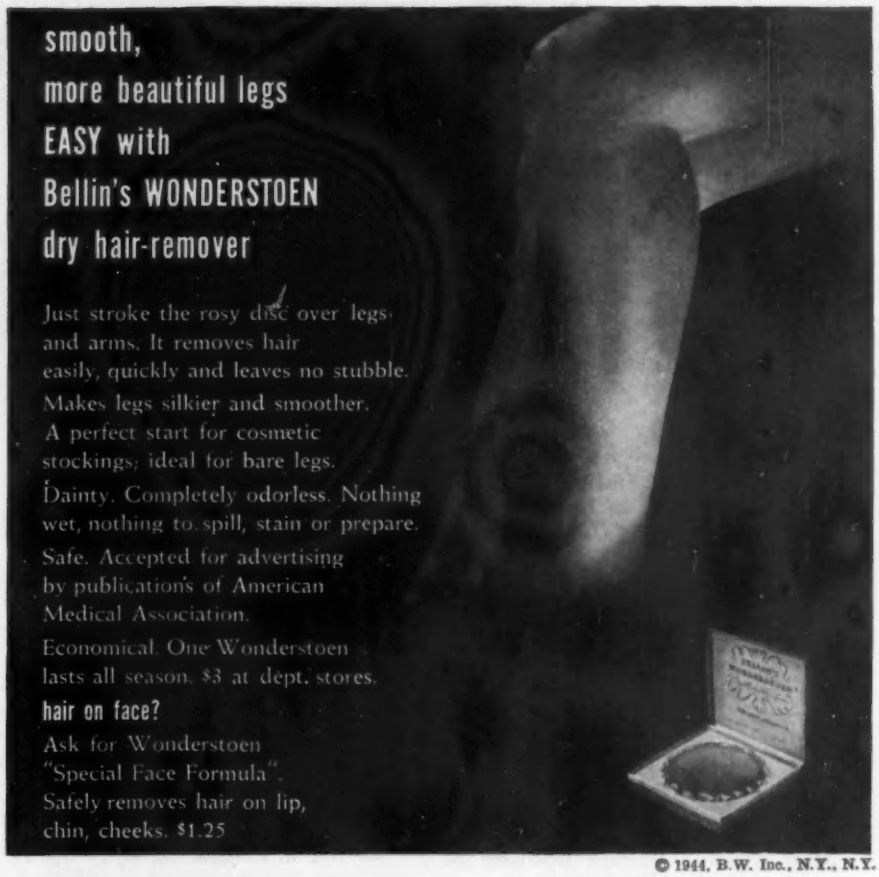
"Costa Rica—The Orosi health center has been completed—contracts for sewers and sewage disposal at Heredia have been signed—four expeditions on horseback are exploring four separate regions to list and map all chinchona (quinine) trees found.

"Ecuador—Work continues on sewage systems, the infectious disease hospital and the school for nurses at Quito—allocations have been made for a municipal laboratory for milk, water and food analysis, a psychopathic hospital and a city market for vegetables and fruits. Work continues on the tuberculosis and the general hospital —campaign against plague has continued successfully. Rat and flea-killing measures have been undertaken two or three times—no new cases of plague have appeared.

"Bolivia—reports of mosquito inspectors show a decrease of 90 per cent in house captures of mosquitoes as compared with beginning of program—temporary hospital in operation—field party has taken over operation of a brick factory for making bricks for hospital and dispensaries—anti typhus and anti plague campaigns are started—

"Brazil—plans were made for typical fifty bed hospitals—posts now extend along the valley from Belem to Acre. These are being manned by physicians and 'guardas' engaged in malaria control—Dr. Causey, in the laboratory, examined 15,050 mosquitoes and identified 2,767 larvae—special railroad car is equipped as a laboratory—malarial reconnaissance surveys will consist of malaria histories of all residents, blood smears from children under 10, studies of Anopheles mosquitoes, establishment of control camps. Ten launches now operating on Amazon—"

Those brief glimpses at the field work of General Dunham's army reveal it as made up of explorers, engineers, brickmakers, ditch diggers, builders, insect and pest exterminators, drain men, rivermen, chemists, nurses and bacteriologists. They are also road builders and lumbermen. Except for inoculations, the doctors don't really begin until the other departments of the army have cleared the way. But it is, of course, the doctors who map the campaign. Its objectives are summed up by Doctor Dunham: "These projects have been planned for immediate wartime needs in connection with hemispheric defense and development of rubber, fibers and other tropical industries. But when the war is over, the hospitals, nursing schools, sewage, water and other sanitation facilities will remain to become permanent contributions to the health of our neighboring republics. What we aim at is a hemispheric standard —and a high one—of public health. That will be one of the notable achievements of friendship and unity of action among the Americas in these crucial years."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EASY with
Bellin's WONDERSTOEN
dry hair-remover
Just stroke the rosy disc over legs and arms. It removes hair easily, quickly and leaves no stubble.
Makes legs silkier and smoother. A perfect start for cosmetic stockings; ideal for bare legs.
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hair on face?
Ask for Wonderstoen "Special Face Formula". Safely removes hair on lip, chin, cheeks. $1.25
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"Yes . . I use Dura-Gloss"

You can't imagine what a lovely nail polish Dura-Gloss is, until you've actually used it yourself. Its brilliance and rich color add *life* and irresistible charm to your hands, to that lovely over-all picture of YOU as others see you. Dura-Gloss resists chipping and peeling because it contains Chrystallyne, an ingredient which makes it "set" quickly and hold well to the fingernail. A dime is all Dura-Gloss costs, at any beauty counter.

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Lorr Laboratories
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Founded by E. T. Reynolds

DURA-GLOSS NAIL POLISH

Dura Coat Polish Remover Cuticle Lotion

Neurosurgery

(Continued from page 267)

was then treated by x-ray therapy because of the nature of the organism. Now, three weeks later, he is well on the road to recovery.

Next we visited Private Blake Allshouse of the 5th Bombardment Group of Pearl Harbor. He was fully dressed, sitting on the edge of his bed; his curly blond head bent over an airplane he was working on.

"How's the airplane coming?" the nurse inquired, as she leaned over to examine it.

"Fine," Private Allshouse answered. "If it were a little larger I could take it out and really fly it." His eyes sparkled as he held up a perfectly built little B-17 for us to examine.

It was on Dec. 7, 1941, when the Jap bombers strafed Pearl Harbor, that Private Allshouse had been injured. A machine gun had shot away part of his sciatic nerve, the large nerve of the leg. Since his arrival at the neurosurgery section of Fitzsimons General Hospital he has undergone three operations. In the first, doctors stretched the nerve ends and brought them together as closely as possible before fastening them. This stretched position of the nerve in time became its normal one. With the second operation the nerve ends were brought closer together before they were fastened. With the third operation, the doctor was able to bring the sheaths, which are the coverings of the nerve ends, entirely together. Once that was accomplished, the little nerve fibers inside the sheaths started growing approximately two millimeters every day. Now they have grown all the way down to his foot, so they are able to function normally. There was a time in medical history when, if a patient had received such an injury as Private Allshouse did, his leg would have been useless for life.

"Do patients like Private Allshouse recover as rapidly as those who have been operated on for brain tumor do?" I asked the nurse as we left his room. She explained that patients who have injuries to the nerves of the legs, arms and face, as well as the spinal column, are sometimes obliged to remain in bed for months while these parts of their bodies return to normal as the nerve fibers grow together. Certainly the rewards of perseverance in these cases are eminently worth while.

As we walked down the hall my glance strayed to two young men standing in an open doorway laughing and talking, looking perfectly well and normal.

The nurse's eyes followed mine, and she said, "Take those two soldiers there. They each had almost identically the same operation as Private Allshouse had, except that they were shot through the median nerve in the arm during the Pearl Harbor attack. It won't be long now until they'll be leaving the hospital and returning to their posts. But come, I'm going to take you to meet Lieutenant Catherine Riley, who is convalescing on the next floor."

Then, noticing my surprise, she added, "Oh, yes! Our doctors operate on women, too, if they are members of the United States Army and have been injured or become seriously ill while on active duty."

As the attendant took us up in the large elevator to the next floor I asked a question that had been on my mind for some time. "Do the surgeons here ever operate on civilians in the neurosurgery section?"

"No! Exceptions are never made. It isn't because the officers in the neurosurgery section wouldn't like to, but it would be humanly impossible, since they have their hands full operating on stricken members of the military service sent here in a constant stream by the War Department."

As we entered the room of Lieutenant Riley of Fort Lewis, Washington, who wore around her shoulders a blue silk negligee and who sat propped up in bed against billowy pillows, she laid her book aside and smiled a greeting. After the nurse had introduced us I said, "You don't look ill at all, Lieutenant Riley."

"I really do feel splendid now," she agreed, "but the doctors told me that if I hadn't been operated on when I was, both my legs would have been completely paralyzed for life."

Her case was another outstanding example of the wonderful work going on in the neurosurgery section of this great hospital. Lieutenant Riley had a tumor of the lower spine and nerve roots. To cure this trouble the surgeon removed the second, third and fourth segments of the sacrum in the lower part of the spine. Nine days following the operation, Lieutenant Riley was able to walk a few steps with the help of a nurse, and now, four and one-half months later, her spine is almost completely healed.

Here in the neurosurgery section of Fitzsimons many types of spinal operations are performed. Perhaps one of the commonest types that the doctors encounter is a slipped disk. The trouble, which is caused by one of the pads between the vertebrae, starts with a pain in the back of the leg. Veteran Elton L. Crabtree of Camp Carson at Colorado Springs, Colo., had an operation of this sort just four days before my visit. He had a ruptured disk after he was thrown out of a jeep onto his back. The surgeon removed his intervertebral disk, and the first thing Crabtree said when he came out of the anesthetic was, "Gee, whiz! That pain I've had in my leg ever since I was hurt is all gone now."

My visit at an end, I stood on the steps of Fitzsimons and looked back in admiration. Not only is this hospital a beautiful and delightful place for patients to be, but it is also a place where they receive the best of care for their afflictions. This great institution, which is one of the largest and most modern permanent army general hospitals in the United States, contains approximately 3,500 beds. In addition to clinics, laboratories, operating rooms, auditorium, kitchens and mess halls, it has offices for all the administrative officers of the army medical corps on duty here. During the last year, in the neurosurgery section alone, over 500 patients have been cared for; many of the soldiers were saved from permanent, tragic disabilities and will be thankful to these fine surgeons for the rest of their lives. With each round of the clock, soldiers who have been injured critically in battle-torn war zones or elsewhere are receiving such fine medical care that most of them are being restored to lives of usefulness. With a prayer of gratefulness in my heart I turned and slowly walked down the steps.

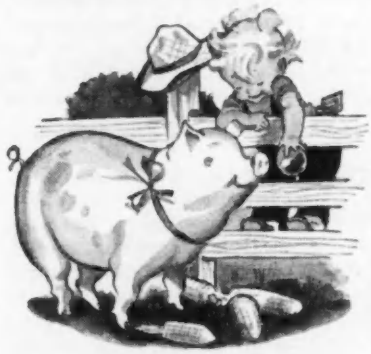
TOXOPLASMOSIS

The disease toxoplasmosis, although thought to be uncommon in man, is almost invariably fatal when it does strike. Treatment has been unsuccessful. Because sulfapyridine was found to be strikingly successful in curing acute toxoplasmosis in mice, "The results appear to warrant the use of the sulfonamides in treating human acute toxoplasmosis," David Weinman and Robert Berne, of the Harvard Schools of Medicine and Public Health, Boston, report. They found that the recovery rate is higher the earlier in the course of the disease treatment is started, and also that although therapy cures the disease it does not sterilize the infection and that cured mice remain carriers and retain virulent organisms in the brain.

1. Down in the garden, meeting a beet! The bestest, rosiest kind of beet it is, too! 'Cause it's going into Clapp's Baby Foods. And a baby (*your* baby) deserves the best vegetables that grow!

2. Out in the kitchen, seeing a cooker! What a fine cooker it is—a special Clapp's pressure cooker that knows just how to keep the vitamins and minerals in your baby's food.

3. Away in the post office, checking the mail! It's mail for Clapp's—from happy doctors who say, "Thanks for making those nourishing meat-and-vegetable dishes that are *so good* for babies!"



4. Off in the barnyard, admiring a pig! Such a wonderful little pig! When he grows up he'll help babies enjoy their vegetables—by giving a delicious, tangy flavor to Clapp's Vegetables with Bacon.

5. Up in his high chair, calling for more! More Clapp's Baby Foods, naturally! Since Clapp's make *nothing but* baby foods, it's little wonder that they know all the secrets of making foods taste just right to babies.

6. Back in the pantry, surveying the shelf! On the Clapp's shelf you'll find 18 varieties of *strained* foods (for little babies), 15 varieties of *junior* foods (for older babies), and 2 pre-cooked cereals (unrationed!)—Clapp's Instant Cereal and Clapp's Instant Oatmeal. Try them and see how "Babies Take to Clapp's"!

All over America, food fights for freedom. Our nation's food supply is precious. Produce and conserve food. Share and play square with it.

Wartime Problems of Children

(*Continued from page 269*)

ployment for many parents, and they assisted in 727 cases of extreme poverty. The causes of problem behavior remain about the same as they always have been—except that they are supplemented and stressed during these times.

One of the principal causes is lack of parental supervision because of the employment of parents in war production plants. In many cases, the father works in the daytime and the mother works at night, or their employment is reversed, with the result that children are utterly without supervision. Many of them run the streets at all hours of the day and night.

In an effort to solve the problems of children who are out of adjustment in the regular elementary and high schools, the Chicago Board of Education maintains two special schools. These schools are provided with psychologic, medical and dental clinics. They also provide a social service which enables them to trace behavior problems to their sources—usually in the homes. When a child becomes a serious problem in a regular school it is desirable to remove him from the environment in which his misbehavior began and to place him in an environment where all the factors involved in his misbehavior may be studied and a solution of his problem sought. The services of social workers are indispensable in the solution of juvenile problems and the prevention of juvenile delinquency. In our city, the Montefiore and Moseley special schools have professionally trained social workers on their staffs. These workers are trained, regularly assigned teachers who have had social work experience. They make thorough investigations of each case and make a full case study report. In addition, these schools are supplied with attendance officers by the Bureau of Compulsory Education. These officers try to remove the causes of truancy by giving immediate service when a child is absent.

One cause of maladjustment in school is the inability on the part of many children to read. The special schools have teachers whose work is with boys and girls who have reading disabilities. That the teaching of remedial reading is effective is indicated by the reports of the psychologists, which reveal that pupils make an average of about three months progress in reading for every month spent in a remedial reading class. It is interesting to note that when children find that they can learn to read they cease to be problems and readily adjust to the school program. The same remedial procedure is followed in teaching numbers. Many children have great difficulty in mastering the intricacies of mathematics. When they find that they can learn and use numbers successfully they readily adjust to school.

These two special schools represent a laboratory where all the factors in pupil adjustment can be studied. The schools combine the facilities of a child guidance clinic with those of a special school designed to meet the needs and limitations of boys and girls. This results in diagnosis and treatment of behavior difficulties, since the clinic and the school are one. The combination of clinical and school facilities serving as a single, well coordinated unit is a distinct departure from the usual provisions for caring for problem students.

It is found that children present problems in school not only because of handicaps in curricular subjects but also because of physical difficulties. For example, it was found on a physical examination of problem boys that they had an average of more than four physical defects each. Ninety-six per cent of all those examined were in need of dental care. Many of these problem boys were found to be suffering from enlarged lymph glands, enlarged thyroids, hypertrophied tonsils or adenoids, malnutrition or anemia. While the relation of physical defects to behavior problems is not well defined, and even though the physical defects may not have been the cause of misbehavior, they are a factor in its persistence.

Another factor in behavior is mental limitation. The group of boys and girls who present behavior problems are, as a whole, a "dull normal" group. Their intellectual development has in many cases been uneven. Mental variations also play a part. The low median intelligence displayed by this group is evidence that the majority of them are intellectually dull children who have had little satisfaction from ordinary school life. The regular classroom is not organized to provide for the dull or intellectually undeveloped child. The natural result is that he becomes indifferent or antagonistic to school. Also he develops personality traits that are not conducive to his best adjustment in society.

The age ranges of children in the special schools is from 10 to 17 years. Since the median age is approximately 14 years, there is indication that adolescent aggressiveness and mental instability are factors in the behavior deviations of many. Most of the children who find their way to these special schools are retarded an average of two or three years in school subjects. Undoubtedly this leads to the development of inadequate personalities and to unsatisfactory behavior manifestations.

In considering personality, we must take that of the teacher into account. The effect of a teacher's personality which is in conflict with that of a boy or girl may be dis-

YOUTH BROADCASTS

"Here's to Youth," a new radio program presented by the National Broadcasting Company in cooperation with several national youth organizations, is a weekly dramatization of the many new problems young people are facing today as a result of wartime conditions in their homes and communities. The program, which is sponsored by such groups as the Boy Scouts, Girl Scouts, Junior Red Cross, YMCA, YWCA and others over NBC stations at 7:00 p. m. (EWT) on Saturdays, also seeks to suggest ways and means for families and communities to solve these new problems of youth.

Typical broadcasts present professionally written and acted scripts dealing with such familiar situations as those which arise when vacant lots, playgrounds and community centers are taken over by adult war activities, when families are forced to live in trailer camps, and when youngsters are left to their own resources by war working parents. Solutions are suggested by dramatizing many of the wholesome, effective programs worked out through community-wide participation in recreation and youth projects of various kinds.

Commenting on the broadcasts, *The Journal* of the American Medical Association says: "The youth agencies concerned together with the National Broadcasting Company have set out to mobilize communities for local cooperation and are showing in each script exactly how it can be done. This is an example of community cooperation by which all wartime problems can be solved if there is a solution."

"No, Mrs. Davis, smallpox has not been stamped out!"

Yet survey shows widespread failure by American mothers to have their children vaccinated

Failure to vaccinate—those three words tell why we still have outbreaks of smallpox in this country. Only recently an unsuspected case of smallpox, moving from one state to another, started an epidemic in which 65 cases developed.

Most mothers believe in vaccination—but too many fail to *act*. A recent nation-wide survey showed that one-third of all the mothers questioned had never had any of their children vaccinated against smallpox.

Don't expose *your* child to the risk of catching contagious diseases. If your baby is three months old, you should consult your doctor *immediately!*

At the same time, ask the doctor for an Immunization Record Card.

THE IMMUNIZATION RECORD CARD will remind you to consult the doctor about your child's immunization—

At the age of:

3 to 12 months—for vaccination against *smallpox*. It is practically *sure* protection.

6 to 9 months—for immunization against *whooping cough* and *diphtheria*—also tetanus. Diphtheria and tetanus immunizations are safe and effective—complete tetanus immunization giving practically 100% protection.

18 months—for immunization against *scarlet fever*, if the "Dick Test" shows that your child is not naturally immune.

When should children be re-immunized?

Immunizations against many diseases gradually wear off, and repeated immunizations are necessary. The safety periods during which the original immunizations remain effective vary with the different diseases. Your doctor will enter on the Immunization Record Card the ages when your baby should be brought back for re-immunizations.

If your child has never been immunized, don't risk his safety a day longer. Ask your physician to start your child's immunizations *now*, and to give you the Immunization Record Card to facilitate *continued* protection.

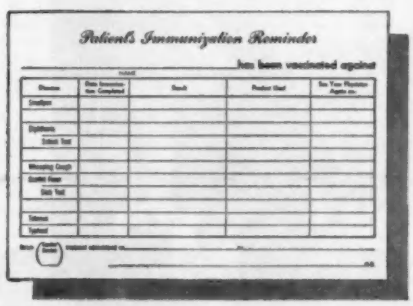
The only known positive way to prevent smallpox is by vaccination—and re-vaccination. Until this protection is given to every child, smallpox will continue to be a menace.

This Card May Save Your Baby's Life!

This card will tell you just *what* diseases your baby can be immunized against . . . and remind you when to take your child back to the doctor for the additional immunizations and re-immunizations.

Don't trust to your memory! Keep the Immunization Record Card in a place where you will be sure to consult it frequently—at least twice a year.

Sharp & Dohme supply these cards to physicians free upon request.


Patient's Immunization Reminder

has been vaccinated against

JUST OFF THE PRESS! New booklet on immunization giving facts every mother should know about children's diseases . . . their special danger for babies . . . their harmful after-effects. Tells you what methods of protection can and should be used. A free copy of this booklet will be sent on request. Write to: Sharp & Dohme, Department H-4, Philadelphia 1, Pennsylvania.

This Immunization Record Card is free

These cards are supplied by Sharp & Dohme to the physician in two parts—one for his own records and one for you.

Sharp & Dohme

Makers of ***Dried Blood Plasma—a development of Sharp & Dohme Research—as well as Sulfa Drugs . . . Vaccines . . . Antitoxins***

IT'S NO PROBLEM TO MAKE
MILK EASY TO DIGEST

This is the way so widely recommended by doctors

Just add ½ "Junket" Brand Rennet Tablet to a glass of milk, stir until dissolved, let stand 10 to 20 minutes, then drink. That's all. The rennet enzyme causes the milk to form soft, fine, easily digested curds when it reaches the stomach, performing the first step in digestion.

1

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3

Carry Them in Your Purse

"Junket" Rennet Tablets come in handy tubes of 12 tablets. Vest pocket or purse size. At all druggists and grocers.

FREE TRIAL OFFER

"THE 'JUNKET' FOLKS," Chr. Hansen's Laboratory, Inc., Dept. 334, Little Falls, N. Y.

Please send me FREE SAMPLE packet of "Junket" Rennet Tablets and your illustrated recipe book of rennet-custard desserts.

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New Freedom offers real comfort. Widely recognized as the perfect before and after garment. Has the exclusive CONTROLLED UPLIFT feature which permits quick, easy, fractional up or down separate cup adjustment. In all sizes, small, medium, and large, from $1.75 at better stores, or write
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Your RED CROSS is at his side

astrous for the latter. This is another reason it may be best to remove a child from his home school and place him in a special school, where he can find adjustment with teachers who understand him.

But it is the by-products of the war that are causing much of the havoc in the behavior of teen age children. Boys in ever increasing numbers want to leave school and work, and boys between the ages of 14 and 16 encounter little difficulty in securing employment. Many of them misrepresent their ages, some with the aid of a birth certificate issued to an older brother and some because the employer needs help and is willing to take a chance with the law. They plead the necessity of war work. The opportunity for boys to earn unprecedented sums of money makes it difficult to keep them in school.

Parents connive at keeping children out of school to have them work. In this connection, there are all too many instances in which their action is justified because the family needs their earnings so desperately.

The same conditions maintain as to girls, except that the difficulties into which they get themselves are so much more serious. In many cases there is little or no family supervision, with the result that girls wander far from the paths of rectitude.

Much problem behavior and delinquency could be prevented if the public would take the attitude that delinquency is sabotage of the war effort. That it is sabotage is clearly indicated by the following letter from E. J. Doyle, president of the Commonwealth Edison Co. of Chicago, to Dr. William H. Johnson, superintendent of schools.

"The breaking of electric light bulbs by youthful pranksters in the hundreds of railway underpasses throughout Chicago has assumed epidemic proportions in recent months and I am writing to you and to Monsignor D. F. Cunningham, superintendent of Catholic Schools, to ask your help in correcting the situation.

"The number of bulbs destroyed in these subways has trebled in the past year, and investigation shows that it is due almost entirely to mischievous boys on their way to and from school. Although the police are doing their best to combat the problem, the effectiveness of their efforts is naturally limited because of the many viaducts to be watched.

"Not only does the breaking of these bulbs present a serious menace to public safety, but it is a deterrent

FROM COAST TO COAST... GRATEFUL MULTITUDES HAIL

Zenith's Crusade to Lower the Cost of Hearing!

TO THE hard of hearing men, women and children of America, a new world of happiness has been opened! At a cost which, for the first time, brings a fine type of hearing aid within reach of all, the new Zenith Radionic Hearing Aid is lifting the cloud of misunderstanding and missed opportunities from the lives of those who have *suffered in silence.*

As this mighty Zenith crusade sweeps ahead, it is *revolutionizing* the cost of hearing. It is enabling men and women to be restored to full usefulness in vital wartime work . . . children to be saved from failure and unhappiness . . . the hard of hearing, and their families and friends, to rediscover the enjoyment that comes when normal sounds are heard again.

From coast to coast, America has given this crusade an enthusiastic welcome. The proof is in the deluge of orders pouring in from every part of the nation . . . orders which *continue* to exceed all anticipation. Please accept our apology if you have been unable to secure a Zenith Radionic Hearing Aid. We are making every effort to supply the demand. Our production is increasing daily, but we shall *never* break faith with our hard of hearing friends by sacrificing quality for speed or quantity.

You have waited years for this crusade that lowers the cost of hearing. Note carefully the advantages which the new Zenith Radionic Hearing Aid now brings you—and we feel sure you will decide never to pay *more* and get *less* in a hearing aid. You will find it worth your while to wait a little longer, if necessary, until Zenith's precision production facilities can meet the needs of your community.

In the meantime, you are invited to attend the demonstration now going on at local optical establishments franchised by Zenith. Let your ears decide—you will not be pressed to buy. No salesman will call at your home. Send for free descriptive booklet. Coupon below is for your convenience.

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To Physicians: A detailed scientific description will be sent upon request. Further technical details will appear in medical journals.

*

There are cases in which deficient hearing is caused by a progressive disease and any hearing aid may do harm by giving a false sense of security. Therefore, we recommend that you consult your otologist or ear doctor to make sure that your hearing deficiency is the type that can be benefited by the use of a hearing aid.

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*Patent applied for.

to the war effort as well. Tungsten, one of the most essential materials used in the production of lamps, is now being diverted in huge quantities into the radar and radio equipment our armed forces need on fighting fronts all over the world.

"Only a limited supply of this metal is available at the present time for civilian purposes and as a result the manufacture of bulbs has already been restricted. Because of the manpower shortage, it is also difficult for us to replace the broken lamps as quickly as we could in normal times.

"We will appreciate it very much if you will point out these facts to the children in your schools through the principals. I am sure such an appeal to their patriotism will have the desired effect."

Much destructiveness and vandalism on the part of children is the result of resentment for real or imagined mistreatment by teachers. Judge Alexander says, "especially (teachers) failing to recognize and report behavior problems in their incipient stage and to see that they receive proper treatment."

There lies the crux of the whole matter. I never have a serious problem referred to me that I cannot trace back for from two to four years. Early detection and early treatment will prevent many children from becoming delinquents. Recognizing delinquency as an act of sabotage to the war effort and dealing with it through aroused public opinion will go far toward bringing our keyed-up youth down to solid ground and solving delinquency and other serious behavior problems.

The Development of Penicillin

(*Continued from page 275*)

to be quite stable in these solvents.

From the organic solvents it could be re-extracted into water by the addition of the right amount of alkali. Little loss of antibacterial activity occurred during these operations provided they were carried out quickly and the solutions were kept cold. This transfer of penicillin between solvents and water has become the basis of all the extraction processes used on a large scale by commercial firms.

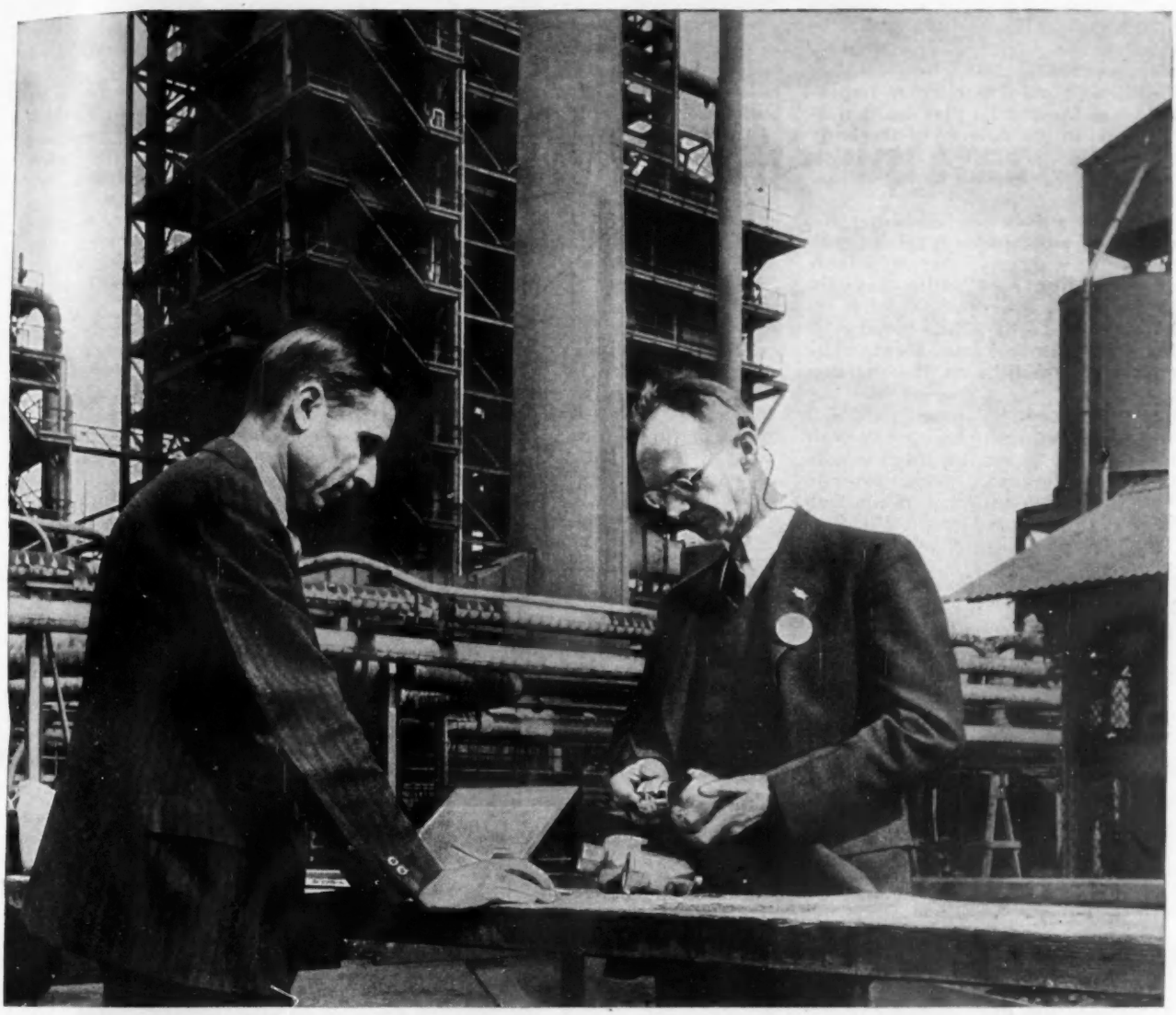
By repeating the process several times and varying the solvents, a considerable purification and concentration of penicillin is achieved. On drying the final solution from the frozen state a preparation of penicillin is obtained in the form of a yellow powder which keeps its antibacterial activity unchanged for a long time. Though chemically still very impure—these preparations contain only about 10 to 20 per cent of pure penicillin—the antibacterial power is great. They contain about 100-200 Oxford penicillin units per milligram, which means that when diluted from 1 part in 5,000,000 to 1 part in 10,000,000 they prevent the growth of staphylococci. Preparations of this degree of purity can be used for all clinical purposes.

Further purification presented a harder problem, since penicillin is unstable toward many reagents normally used for purification purposes. It is unstable in dilute acids and alkalis and is destroyed by many metals, such as copper, cadmium, zinc and mercury, and by primary alcohols and oxidizing agents such as potassium permanganate. This severely limited the selection of methods for purification, but penicillin preparations which are almost pure have now been obtained.

The purest material obtained in Oxford has an activity of about 1,000 units per milligram, corresponding to an inhibitory power against the staphylococcus of about 1 part in 50,000,000. The unique feature of penicillin, when compared with other antibacterial substances, is that it combines this astonishingly high antibacterial activity with a very low toxicity. An amount several hundred times greater than the therapeutic dose can be injected intravenously—into mice—without any noticeable toxic effect.

This lack of toxicity is also observed with less pure preparations, and it may indeed be counted as extremely fortunate that none of the numerous contaminating substances causes harmful effects, even when the dose of penicillin is large—far beyond that necessary for therapeutic purposes. For this reason it is unnecessary to subject penicillin to the elaborate and difficult purification processes before it can be used for clinical purposes.

After the low toxicity of penicillin had been demonstrated on mice, a more extended study of its biologic properties was undertaken. It was shown that a concentration at least a hundred times greater than that necessary to stop the growth of sensitive bacteria was harmless to the white cells of the



FOR many years the Standard Oil Company (New Jersey) has been famous for its common-sense in handling men. Figures show that the Company has the lowest employe turnover in the oil industry. One typical instance of why this is so can be seen in this photograph of Mr. Franklin L. N... taken in the Bayway plant near the great fluid catalytic cracking plant for 100-octane gasoline.

Mr. N... has been with Standard Oil of New Jersey for 28 years. Ten years ago when his hearing failed and he got a Sonotone, men who wore hearing aids in offices and plants were as scarce as the proverbial "hen's teeth", because most employers felt that loss of hearing was likely to cut into a man's efficiency, and of course no employe wanted to risk his job by wearing a hearing aid.

But with the sane and liberal attitude so typical of its employe relations, the Company's executives saw that it was just as sensible for a man to take care of his hearing as of his sight. And far from discouraging Mr. N...'s wearing a Sonotone, they heartily approved as his subsequent promotions attest. Today, as senior specialist in general engineering and development, he has a highly important executive job, is in the middle of the 100-octane gasoline, synthetic rubber and other vital developments, involving long conferences in his own and other oil companies and in Washington . . . a 16-hour-a-day job he frankly terms impossible without his Sonotone.

The only way, of course, that a handicap like Mr. N...'s could be so successfully set aside is by the *individualizing* of his hearing aid to his particular needs, and an unflagging, sympathetic service that sought to give him *uninterrupted* hearing. A hearing aid alone is *not* enough . . . and it is the development of careful, scientific *individualized* fitting techniques, a nation-wide organization, trained personnel, liberal, service-by-replacement policies, and the recognition of the fact that a hard of hearing man wants *hearing* and not just a hearing aid, that has made Sonotone an outstanding leader in the industry for more than 12 years.

There are over 150 Sonotone offices. The office nearest you is listed in your local telephone directory. Phone for information or write SONOTONE, ELMSFORD, N. Y. *In Canada: write 229 Yonge St., Toronto. In England, 144 Wigmore St., London, W. 1. Also available in the world's principal countries.* Ask for a free copy of "Hearing Through the Years".

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blood and to tissue cells grown in glass vessels. The very low toxicity of penicillin to the white cells of the blood was of particular importance, as these cells play an important part in the defense of the body against invading bacteria, which they have the power to ingest and destroy.

Penicillin does not kill bacteria—except perhaps under special conditions—but merely arrests their multiplication, and while they are in this state of arrested division we have to rely on the white blood cells to remove and destroy them. The effect of penicillin on the division mechanism of bacteria can be demonstrated by growing penicillin-sensitive bacteria in the presence of amounts of penicillin just insufficient to suppress their growth. Under these conditions, as division is being interfered with, the bacteria show giant forms and long, contorted chains.

It was further shown that penicillin is readily absorbed from an intramuscular or subcutaneous injection and from the small intestine. Once absorbed in sufficient quantity, a simple test demonstrates that it is present in the circulating blood. Unfortunately it cannot be given by mouth, because the acid of the stomach would destroy it before it reached the intestine. It does not pass from the blood into the cerebrospinal fluid.

Penicillin was shown to be rapidly excreted in the urine, the bile and to some extent in the saliva of animals. In man also, excretion in the urine is very rapid, and this explains why the doses have to be not only large but frequent. To keep a high concentration of penicillin in the blood is like filling a bathtub with the plug out.

Another important observation was that the antibacterial action of penicillin is not diminished in the presence of blood, pus and tissue constituents. This is in sharp contrast to the sulfonamide group of drugs, whose activity is much lower when pus is present, and which therefore have relatively little effect in suppuration.

The disease-producing bacteria which are affected by penicillin make an impressive list, which is shown in the accompanying table. Many of them are sensitive to just as high a dilution as the staphylococcus. Some are present in nearly every war wound, so that the interest of the armed forces in penicillin is readily understood.

By all these methods penicillin was shown in the laboratory to be an extremely powerful antibacterial agent with low toxicity. The proof that it had chemotherapeutic properties, that is to say, that it would cure disease in living creatures, was also first supplied in the laboratory by what are known as "mouse protection tests." Mice were infected with bacteria which would certainly cause their death unless some successful treatment could be given.

Streptococcus, staphylococcus and *Clostridium septicum*—a gas gangrene producer—were all used on a group of mice, and in each case adequate doses of penicillin gave complete protection without any toxic effect on the animals. A new chemotherapeutic drug had been discovered!

The whole of the work on penicillin has been dominated by lack of material. The mold produces very small amounts of the active substance, and it is a formidable job to grow it on a large enough scale. In addition, the penicillin may be lost if the bacteria universally present in the air contaminate the culture, for they produce a ferment which destroys penicillin. A man is 3,000 times larger than a mouse, and many months elapsed between the trial on mice and the first injection in a man, while we struggled in the laboratory to produce enough material.

The first injection of a small quantity of crude penicillin into man showed that something was present which caused a rise of temperature. Fortunately, this "pyrogenic" substance was an impurity and not the penicillin itself, and further chemical purification removed it.

In the first two patients ever treated the amount of penicillin required was underestimated, and though improvement occurred, the disease was not cured, and there was no more material with which to proceed. However, these two patients gave a good indication of the amount required.

It has been possible to find out the dosage and method of administration, and with this knowledge it has proved possible to produce striking results on even the most serious cases of disease due to staphylococci and other organisms.

This early work in Britain has now been fully confirmed in the United States, and there seems little reason to doubt that penicillin, with the further developmental work which is being undertaken everywhere, will fill an important place in medicine for the treatment of many infections. We are only at the beginning of its exploitation; further progress demands greatly increased supplies. Though no doubt a great deal will be produced from the mold, it is to be hoped that chemical progress will be such that penicillin, and even better substances than penicillin, may be produced in real abundance by synthetic processes.

When plentiful supplies are available it should be possible to treat those diseases which can be controlled by penicillin at the earliest possible moment instead, as is so often the case now, of using the drug as a last resort. When this may be done, an enormous amount of temporary and permanent disability, and even death, may be avoided.

BACTERIA AFFECTED BY PENICILLIN

SENSITIVE

- Streptococcus (childbirth fever and many cases of serious sepsis)
- Staphylococcus (boils, carbuncles and serious infections of bone and other organs)
- Pneumococcus (pneumonia)
- Anthrax bacillus
- Diphtheria bacillus
- Actinomyces ("woody tongue" of cattle and sometimes human disease)
- Tetanus bacillus
- Bacilli of gas gangrene
- Gonococcus (gonorrhea)
- Meningococcus (spotted fever)

PARTIALLY SENSITIVE

- Typhoid bacillus
- Gaertner's bacillus (food poisoning)
- Vibrio El Tor (cholera-like disease)

INSENSITIVE

- Tubercle bacillus
- Plague bacillus
- Cholera bacillus
- Brucella (undulant fever)
- Colon bacillus and related organisms

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QUESTIONS AND ANSWERS

Eyestrain and Nearsightedness

To the Editor:—Can you tell me if doing close work has any effect on progressive myopia? I am a secretary and have always done a considerable amount of close work with apparently no ill effects until the past year. I am told my present difficulty is caused by a slight hemorrhage in one eye. Is this caused by overwork or are there other contributing factors? If I must give up this type of work eventually, I feel that I should be giving it some thought now, but so far I have been unable to find any one who would give me a definite answer to this question.

I now wear about a —25 diopter lens and am 29 years old. When I started to school I wore a —12 diopter lens.

Oregon.

Answer.—Ophthalmologists are not united on the question of whether or not close work has a detrimental effect on myopia, particularly of the progressive type, but the consensus now is that the use of the eyes for close work in an appreciable amount has a definite tendency toward increasing the amount of the myopia. This is particularly true during the years of growth and up to the middle twenties. For that reason, the majority of oculists now prohibit children with an hereditary tendency toward the higher myopias from the close use of their eyes, over and beyond the necessary school work.

In the specific question cited above, a little further information is needed. Is the strength of the glass worn actually —25 diopters or is it —0.25 diopters? If the latter, then the eyes may be used indefinitely without harm and the hemorrhage is not due to the myopia. But if the questioner is actually 25 diopters myopic and has had a hemorrhage in one eye, then close use of the eyes should be strictly forbidden. Not only will focusing on near work be harmful, but also the side-to-side motion involved in reading and typing can produce serious complications.

Mange

To the Editor:—Please tell me: Is it likely that human beings would contract mange from a cat?

Tennessee.

Answer.—Mange in animals and scabies in human beings are caused by the mite, *Sarcoptes scabiei.* The parasite is not at all particular into whose skin it burrows for its food or to lay its eggs. The cat may be a host to the mange mite, on occasion, but is much more likely to be attacked by a closely related species, *Notoedres cati.* The eruptions produced are similar to those of mange. This mite will also attack persons, causing a most severe itching of the skin.

Metabolism

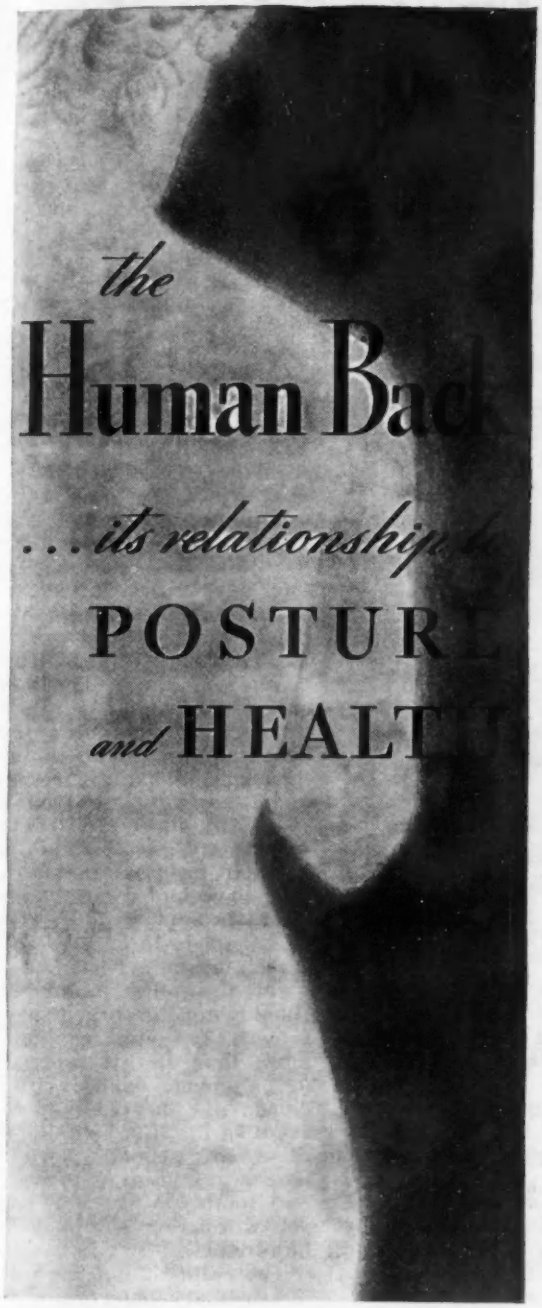
To the Editor:—On seasonal arrival of cool weather does the body, while presumably conditioning itself to lower temperatures, consume or burn a larger amount of fat than it does in warm weather, when there is no change in diet or activity?

Georgia.

Answer.—There is an increase in the rate of heat production of the body after prolonged exposure to cold. The rate at which the food is burned in the body is called the metabolic rate or the process of metabolism. With the onset of cold weather, metabolism is increased so that the body generates more heat, thus enabling it to maintain a constant internal temperature.

The body utilizes the fuel on hand to furnish the increased heat production. If carbohydrates are readily available they will be used first. Of the three foods, fats give the most heat for a given weight. They give more heat than either carbohydrates or proteins. However, a small amount of carbohydrates must be burned to properly consume the fats.

Muscular activity, like cold, increases the metabolic rate. The degree of muscular activity and amount of previous training determine the actual increase in metabolic rate for a given person.



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This additional sixteen-page booklet, "The Human Back... Its Relationship to Posture and Health," tells its story in simple, non-technical language, and is attractively illustrated. It is educational, non-commercial, informative. We believe it will inspire its readers to a better appreciation of the importance of good posture.

We shall be glad to send copies of this booklet, free on request, to individuals or groups identified with public health education. Please write on your letterhead or use coupon below.

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Speech is Important

By CALVIN T. RYAN

Faulty speech habits formed in the early years may cause later grief. With proper training, speech can be learned correctly in the beginning

MONA grew up under the admiring eyes of too many grandparents, uncles and aunts. Being the first grandchild on the father's side, she naturally was the object of much attention, and whatever she did was admired—sometimes to her own harm.

Mona was among those children who have an extra amount of trouble learning to talk. She substituted sounds. She said "sesh sish" for "fresh fish," and all her relatives thought it was cute. Those about her used baby talk, and Mona went into school with the speech of a 3 year old.

Children aren't born with speech. They acquire it. They acquire it from those most frequently with them. They speak the speech they most frequently hear. If they get a certain satisfaction out of incorrect—according to adult standards—forms, they will use them and soon make them a habit too strong to be easily broken. Children, believe it or not, like to please their elders, and when they are laughed at for their cuteness, naturally they persist in that form of behavior. Mona's speech was at first merely cute, and her admirers laughed at her. But soon it became a habit which persisted long enough to become embarrassing to her.

It is not an easy thing to learn to talk. Two of the hardest things which the child is asked to do are to talk and to read. All the organs he uses for speech are used primarily for other purposes. His eyes were meant originally for seeing long distances, but when he reads he has to adjust them to objects only 12 to 14 inches away.

A child left alone on some island but given food, shelter and protection would learn to walk, but he would not learn to talk or to read. Talking and reading and, of course, writing are means of communicating with other people. We can't live in society without some means of communicating our needs, our thoughts and our feelings. For that reason we make a special effort to see that children learn to communicate with others.

Again, let us suppose a child of American parents is taken at birth by adults who speak nothing but Chinese. What will the child speak? Chinese, of course. Similarly, the Chinese child reared by English speaking adults would speak just as perfect English as his foster parents speak.

Here is a little girl who did not learn to talk at the normal age. In time, the child was pronounced a deaf mute, and the parents were ready to have her educated in a school for deaf mutes. But further examination showed that the child was deaf only. Since she had never heard the sound of the human voice, she had never learned to talk. The child acquires speech through imitation. He takes to school whatever faulty pronunciations, incorrect grammar and peculiar speech he has heard in his home.

Mothers can help their children grow in their ability to use language. First come words. The child has to learn that the sounds used by Mother and Father have meanings. The mother can talk to the child while bathing and dressing it—"Now, Mother is washing Baby's foot," or "Now, Mother is putting on Baby's shoes"—and so on. The child learns that a certain sound means "shoes," another means "bath." Children like sound repetitions, such as, "This little pig went to market. This little pig stayed home." Since the child learns through his experiences and contacts, he can be aided to learn speech by adding to his experience with sounds. While children differ in their progress in talking, those who have had some attention paid them show much more rapid progress than do those who are for one reason or another left to themselves.

On the other hand, the child should not be urged beyond his growth in language ability—any more than in his other forms of development. The child's first word, like his first tooth, is an event in the life of the family. But often his second word will be longer in coming than will his second tooth. At 2, Mary may have six words, or she may have six hundred.

The child should learn names for the ordinary objects and events of his daily existence. He should be encouraged very early to call for things by their full names. Children who have had every need attended to by no more effort than a frown or a grunt, or who receive what they want when they merely point, have actually been handicapped in their speech growth. "Too much maid" may be as harmful as "too little mother." If the child points at his shoe, he should be encouraged to say "shoe," or "Baby wants his shoe." He may not get the word quite right at first. If he doesn't, certainly he should not be encouraged to repeat what he has said for "shoe." Rather, he

should hear the word correctly spoken.

These early months are important to the future growth of the child's complete living. Tied up with his language growth will be his ability to distinguish right from wrong, righteousness from unrighteousness.

The child seems to have a natural curiosity to find out about things. It is the same urge that drives the astronomer to find out about the stars, or the Edisons and the Carvers to experiment in their laboratories. If we give the child a few objects at a time and let him, sometimes with our help, find out about them and learn their names, we have given him a chance to grow in language power and in learning. He can learn "ball" from handling it, perhaps trying to taste it, certainly by throwing or bouncing it. He can learn "apple" in a like manner. It is the experience which counts; in learning language, experience counts far more than simply telling the child to "Say 'ball,'" or "Say 'apple.'" A scratch from kitty may teach him more than the whole "Book of Knowledge."

It is true that the child's first literature should be his mother's lullabies, but within a few months he should have picture books. These books come in linen or in various other forms not easily torn. Some can even be washed. Here a comb and brush will be shown on one page. Over there will be a shoe, or a ball, or cup. If the word for the object is printed under it, Mother can point to the word as she says "Ball."

The baby usually loves to hear its mother "just chatter." Of course, the baby soon discovers when Mother is not in a good humor, or is ill. It shows right away in her voice as well as in her looks. But Mother can make up little nonsense, singsong stories in which she speaks clearly the words she wants the baby to learn. One mother used to tell her child the story of the three bears in a little singsong whenever she wanted the child to take her medicine. At 8 years of age, when the child was getting her first "cold shots," Mother went along, and while the doctor was getting the child's arm ready she sang that story again, and it worked.

Adults depend so much on speech that they should be willing to be patient and helpful with a child just learning to talk. It isn't an easy thing to learn to talk. Our language is anything but logical. It is anything but consistent. Often the child is more consistent than the language, and because he is, he makes mistakes. He says "I throwed

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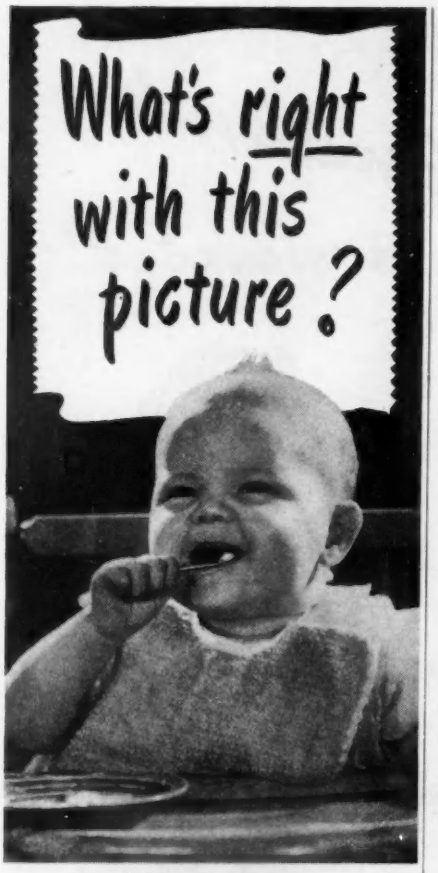

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the ball myself." He says, "I have tooken." Well, we say, "I froze the cream," but we smile when some one says, "I squoze the orange."

But knowing how important it is to talk, write and read the way others do, we keep trying to improve. Later in life, we are rated socially by the way we speak. In college we hear about I. Q.'s, and we learn that one's use of language has much to do with them.

Speech is important, and the beginning of speech is very important. Faulty habits formed in those earliest years may cause much suffering in after years. When a teacher in the ninth grade decided to correct Mona's baby talk and substitutions, she made Mona into a nervous wreck and her condition threatened to drive her from school. It could have been prevented during Mona's first years of speaking.

Infancy and Early Childhood

(*Continued from page 271*)

unless it is recognized by the parents or the attending physician and treated at once, it is likely to produce a permanent developmental defect, influence the child's entire life and cause much parental anguish.

The period of so-called infancy continues until about 18 months. To classify evidence of developmental progress, divide the first twelve months into quarters. The most important achievement in the first three months is control of the six small muscles which manage the movement of each eyeball so that the eyes may be turned at will in each direction. The second quarter, or the 16 to 28 week period, brings command of muscles supporting the head and moving the arms; objects are reached for in this period. The third quarter, or 28 to 40 week period, brings control of the trunk and hands; the infant sits alone, grasps, transfers and handles objects. In the fourth quarter, 40 to 52 weeks, voluntary motor control is extended to the legs and feet, to the index fingers and thumbs. The infant stands, takes steps, pokes at things and starts the human trait of opposing the thumb to the fingers.

Dr. Gesell has also divided the behavior pattern development into the four following headings. The first of these is this power and will to move and control all the muscles in the body. We have just reviewed this muscle control development during the first 12 months.

The second behavior pattern is the development of intelligent use of these muscles, which is called the "adaptive behavior." At 4 weeks, the infant only stares at his surroundings. At 16 weeks, he plays with a rattle in his hands and looks about at will. At 28 weeks he changes objects from hand to hand. At 40 weeks he can place two small blocks together. At 1 year he can pick up a block and place it in a small cup. At 18 months he can handle tiny objects and tries to imitate straight crayon strokes. At 2 years he imitates circular strokes and can put five or six blocks on top of each other. At 3 years he imitates a cross and can build a bridge of blocks. These phases represent growth not only in the control of muscles but also in the adaptation of that control to the accomplishment of specific goals.

The "language behavior pattern" is the third division. At 4 weeks, there start faint, throaty sounds; the baby listens to a bell. At 16 weeks he coos and laughs, or vocalizes socially. At 28 weeks he crows; he vocalizes his eagerness and listens to his own noises. At 40 weeks he says one word, responds to his own name. At 12 months he says two or more words. At 18 months he indulges in jargon, names pictures. At 2 years he uses phrases and understands simple directions. At 3 years he talks in sentences and answers simple questions.

The fourth and last behavior development is called the "personal-social pattern." At 4 weeks, the baby simply regards faces. At 16 weeks, he plays with his hands and clothing, recognizes his bottle, poises his mouth for food. At 28 weeks, he plays with his feet and with toys. At 40 weeks, he plays simple nursery games and feeds himself a cracker. At 1 year, he helps in dressing, "finger feeds" himself. At 18 months, he uses a spoon (with some spilling); his toilet habits are now largely regulated. At 2 years he asks for toilet attention and plays with dolls. At 3 years, he uses a spoon well, puts on shoes; good toilet habits are well established.

These four average child behavior development patterns are excellent guides and should be thoroughly understood by every parent. A thorough understanding of your child's development makes you the helpful guide you should be in your child's growth. You realize that in these early months and years the

demand is not so much for training as for watching the child grow and sensibly and lovingly guiding him.

When the infant starts to walk, danger lurks at every turn. He will run into objects, pull things down, tear things up, spill whatever his hands touch and seem to do everything wrong. This continues until he is 2½ or 3 years old and later. Some infants are more mischievous than others, but this is largely due to a more investigative tendency. None of this behavior should ever be punished. You must always realize the age you are dealing with. Make the child's life safer by putting things out of his reach. Confine his activity to a safe room. Be ever watchful during every waking moment without letting him know of your watchfulness. Regularity of routine is a prime requisite during these early months and years. As soon as the infant is able he must be taught to hold his own bottle, then to feed himself, then to dress and undress himself. When his age will permit, he should be taught his toilet habits at regular times. He should be taught to stay by himself for certain periods, to pick up his toys, to care for his clothing. The younger you can teach him responsibility for his own self the better. It makes him happier; it develops character.

Every child by nature is an optimist. He is a happy, laughing, singing spirit. But this is easily submerged by constant scolding or threatening—or jerking or shaking or loud talking—by not entering into his play, by not praising him generously, by continuously suggesting to him that he is naughty or bad.

The period of infancy is lengthy. It really continues to the age of 3 years; the first eighteen months mark a period of rapid physical development, and the second eighteen months a period of rapid mental, personality and character development. Little girls are ahead of boys an average of six months from the eighteenth month on. Girls learn to talk more quickly and coordinate their movements more quickly than boys, and their vitality appears to be superior. Undoubtedly, this is due to the fact that nature, for biologic reasons, favors the female.

Between 18 months and 3 years the child's curiosity develops into more active and purposeful play. He learns to talk and call for things he desires. Imitation in play appears, as well as the trial and error method in his attempts to do things. From 18 months to 2 years is properly called the "toddling age," as the gait is apt to be wobbly and uncertain at first but always speedy

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—without much attention to where the little feet are going. Toilet habits during the waking hours should be fairly well established by 18 months. At this time the child has developed a waking consciousness of his needs but not always good control.

His interest is now more sustained and his efforts are more voluntary. By 15 months he is taking more responsibility in eating and using his spoon and cup moderately well, but by 18 months he should be well able to feed himself if let alone by mother or nurse. This allows his self reliance to establish itself further. Lack of appetite, indifference to food and prolonged meals are usually the fault of the mother or nurse. Every growing child is hungry; therefore he will eat at his regular mealtime if let alone and given the opportunity to do it his own way. There must be no entertaining at mealtime and no conversation about the food or any other topic unless the child asks an occasional question. Nothing should be said when the child only plays with his food, but he should be taken from the table and made to wait until the next meal. He is not in the mood to eat—either because of physical fatigue or an emotional disturbance such as fright, anger or jealousy—or he is just not hungry at that particular time. This method of procedure applies to all ages of childhood. The merit of any food should never be discussed with the child. Both parents must realize that the child's appetite will disappear if they show anxiety or use coercion or persuasion in any manner—such as rewards or punshment. This might cause the food to become repulsive or nauseating to the child and may lead to actual vomiting.

It is necessary to encourage the development of self reliance and responsibility as early as possible. The average child is sufficiently developed at 15 months for the attempt. Then at 18 months he becomes considerably more responsive, so that self feeding gets along fairly well. The next step is teaching him to help with dressing and undressing; naturally, the buttons, snaps, zippers and ties cannot be mastered until a year or so later. But these small common acts may be tried from time to time. Parents should remember that self reliance and responsibility induce interest, courage and initiative, all excellent attributes of character.

By the age of 2 years, the child should be feeding himself without much difficulty and should be able to pull off or put on simple articles of clothing; he should be completely "toilet minded" by day, but nights may be troublesome until the age of 3 years. In this respect, little girls are more quickly trained than boys, because of the anatomic difference. All these points may appear to be trivial, but beyond doubt the later adult's character, personality and achievement are greatly influenced by the earliest possible teaching of self reliance and responsibility.

At 18 months the child is far enough developed to be interested in pictures of animals, foods or objects with which he may be familiar. If he handles a book he will turn two or three pages at a time; he may call some objects by name or point to an object if the parent first calls it by name. At 2 years the child has good muscle coordination and enough sustained interest to be able to turn the pages of the picture book singly; now he will sit quietly and listen to the reading of short stories. His play is becoming constructive; he does not change every five minutes from one form of play to another but may be entertained for half an hour or so by one thing. His vocabulary may consist of from twenty-five to fifty words. From the age of 2 to 3 years there is a rapid improvement in his personal-social behavior development. At 3 years he has learned enough independence to play by himself; he no longer demands the constant attendance of some adult and should not have it. He will even attempt play with other children. Hence this is the proper time to start a short, daily period of nursery school. This is especially desirable if the child has no playfellows at home, has too many doting relatives or is not being managed correctly and is misunderstood.

By the age of 4 he is developed sufficiently in his emotional make-up and nervous and physical growth to endure an all day nursery school with, of course, a nap period. From 1 to 5 or 6 years, it is well for the child to have twelve hours sleep nightly and also a midday nap of one and one-half to two and one-half hours. This not only rests the child's tired and growing body, but also it regenerates the vital energy so much needed for his mental growth and emotional stability. If any part of the sleep period is to be eliminated it should be the early evening. Not all children require the same number of hours' sleep for refreshing their bodies, but all young children do require a midday nap or complete rest. However, this should not be carried out so rigidly that it may punish the child when, for one reason or another, actual sleep or rest during the nap period is out of the question.

Photo by U. S. Army Signal Corps

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What Goes On in a Moron's Mind

(Continued from page 263)

fewer instances of unconscious humor. Responses here are generally just dull and uninspiring, as:

Q. What is the thing to do if you find an envelope in the street that is sealed, addressed, and has a new stamp?

A. "Open it" or "Leave it there."

Q. What should you do if while sitting in the movies you were the first person to discover a fire?

A. "Holler fire," or "Run out."

Q. If you were lost in the woods in the daytime, how would you go about finding your way out?

A. "Go back the way I came," or "Ask a policeman."

Now and again, however, a moron will come out with an answer that shows thinking of a sort—even if not quite what one is looking for. A number of questions are aimed at measuring the ability to grasp essential similarities. As with all the other parts of the test they start with easy ones—in this case with the simple, "In what way are an orange and a banana the same or alike?"—and then get progressively harder until almost any one might be baffled. About halfway down the list we have: "In what way are wood and alcohol alike?" The reply, "They both can knock you out," may be said to have its points. And this writer will remember to his dying day the dullard who puzzled a long while over the last question in this group—"In what way are a fly and a tree the same or alike?"—and finally answered, a glow of triumph spreading all over his face: "They both leave a spot where they were!"

The opinions and assertions contained herein are those of the writer and are not to be construed as official or as reflecting the views of the Navy Department or the naval service at large.—Ed.

Anesthesia by Vein

(Continued from page 261)

to several factors: The onset of its action is rapid and smooth; there is no mask to breath in, nothing to smell. The needle of the syringe filled with pentothal sodium solution is inserted into an easily accessible vein, usually the one at the bend of the arm, and slowly the injection is begun. In less time than it takes to tell the patient drifts off into a normal sleep. That is the last recollection he has of his anesthetic. There is usually no excitement stage, no struggling, no sense of suffocation, nor giddiness, nor any of the other bizarre symptoms sometimes described by patients who have been put to sleep by other anesthetic agents. Recovery from pentothal sodium anesthesia is usually similar to awakening from a natural sleep. There is absence of nausea and vomiting in about 93 per cent of all cases. Fluids and food can be taken almost at once.

With any general anesthetic all a patient remembers about his anesthetic is going to sleep (induction) and awakening afterward (recovery). If these two phases can be made pleasant for him, as far as he is concerned, the anesthesia is perfect.

There is more to consider than the patient's comfort, however, in classifying any anesthetic agent. It is imperative that it be safe for the patient, it must provide ideal operating conditions for the surgeon and must have minimal deleterious effects on the patient. The anesthetic agent that fulfils all these qualifications has not yet been found; there is no perfect anesthetic agent. Any anesthetic agent is just as safe for the patient as the anesthetist who is administering it.

Pentothal sodium intravenous anesthesia is ideal for certain operative procedures but not for all. Whether it should or should not be the anesthetic agent of choice for a particular patient about to undergo a particular operation is a matter of judgment, a matter that can be decided only by a qualified anesthetist who is thoroughly familiar with all anesthetic agents, their dangers, their limitations and what effect each has on the human body in health and disease. Only after all evidence has been considered can a proper decision be made.

In conclusion, it can be said that the intravenous anesthetic, pentothal sodium, has made for itself a permanent place among the useful drugs of the anesthetist. Pentothal, when selected for operative cases in which it is adaptable and when properly administered by a competent anesthetist, is safe for the patient, allows good operating conditions for the surgeon and provides maximum comfort to the patient.

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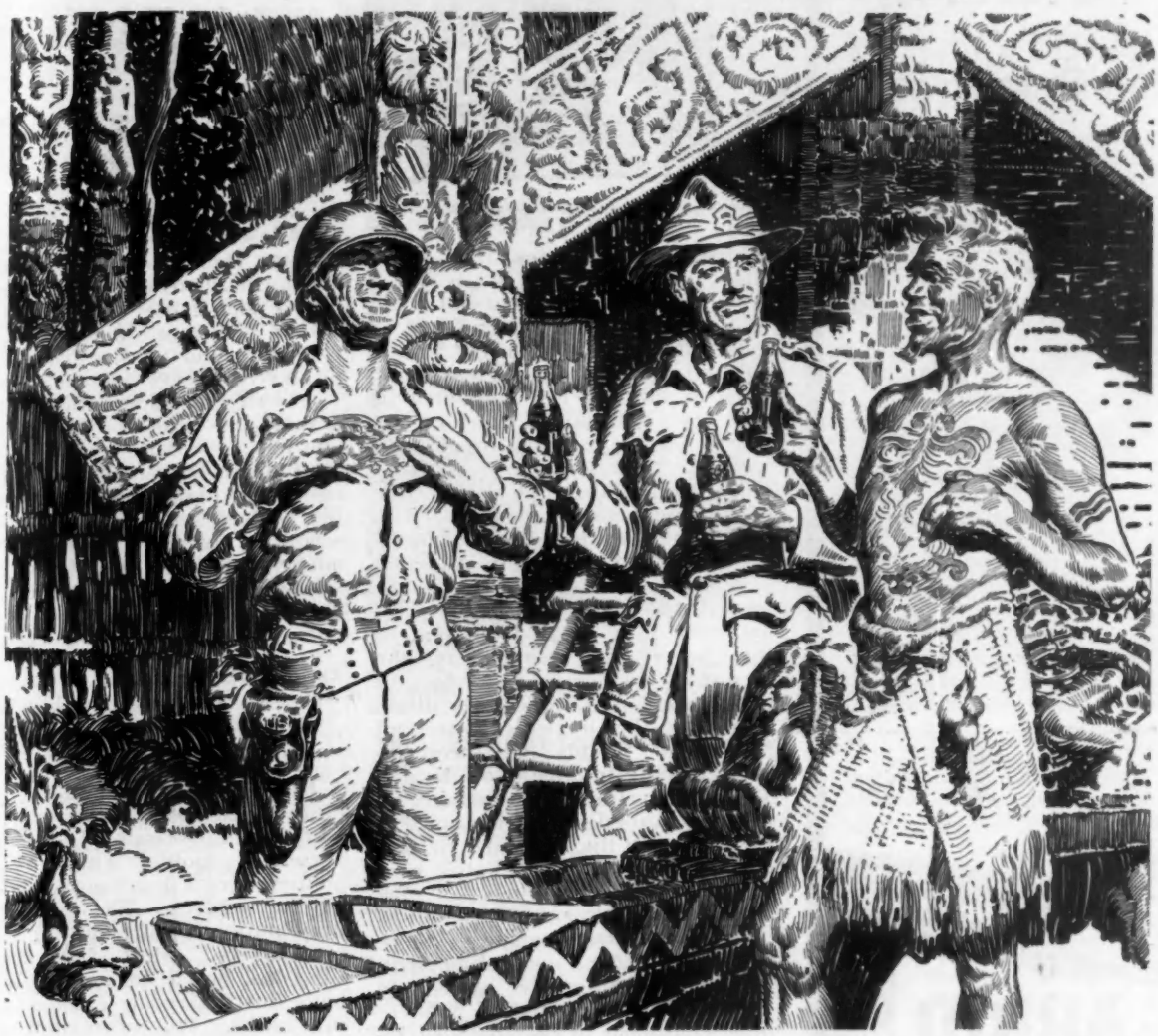

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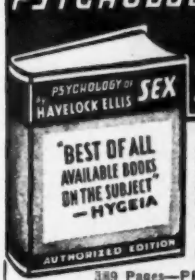

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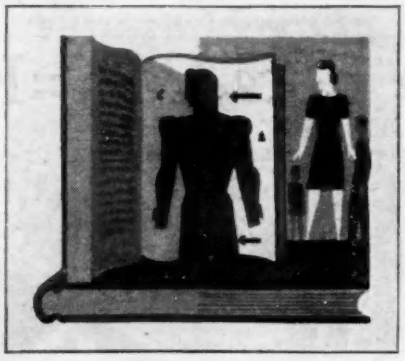


NEW BOOKS ON HEALTH

Pioneers of Pediatrics

By Abraham Levinson, B.S., M.D. Cloth. Price, $2.00. Pp. 119. Illustrated. New York: Froben Press, 1943.

In this second edition the author has added new data and has recast some of the material contained in the first edition. Levinson has adhered to his original intention to have the book serve as a compendium rather than an exhaustive treatise on pediatric history. The book contains interesting and pertinent descriptions of infantile disorders, from the earliest periods of recorded history down to the present era. It is pointed out that in the papyri the sources of the recorded medical knowledge of Egypt are found as well as directions for the hygienic care and feeding of infants and prescriptions for the treatment of disease. The author traces the origins of pediatric knowledge as it occurs in the Bible and the Talmud. He also briefly refers to the pediatric contributions and writings of the period of Islamic culture as well as the Graeco-Roman period.

In several of the succeeding chapters consideration is given to sketches on the pediatric publications contained in the so-called incunabula (volumes published soon after the introduction of printing, fifteenth century). Among the outstanding authors of these early editions were Paulus Bagellardo, an Italian physician, Bartholomaeus Metlinger of Germany and Cornelius Roelin of Belgium. In the sixteenth century, Thomas Phaer, known as the "father of English pediatrics," wrote the "Boke of Children." Levinson continues by sketching the careers and contributions of other pediatric notables during the seventeenth and eighteenth centuries.

A glance at this compendium of pediatric history shows that no sustained or systematic studies in this subject were made until the beginning of the nineteenth century. During this latter period intensive investigations were instituted concerning the anatomy and function of the child's body. As the author points out, it was also at this period that the studies in morbid anatomy began to shed new light on the nature and cause of disease. The author develops the progress of pediatrics during the fruitful and productive years which followed.

A series of biographic sketches develop the story of pediatricians and the personalities who made the most important contributions. A number of photographs of outstanding leaders add interest to the descriptive material. This little volume will be read eagerly by those who are interested in the historical development of pediatrics.

ISAAC A. ABT, M.D.

Expectantly Yours

By Mario A. Castallo, M.D., and Audrey Walz. Cloth. Price, $1.75. Pp. 110. Illustrated. New York: The Macmillan Co., 1943.

This book was compiled by an obstetrician and rewritten and edited by a professional writer who herself is a mother. Therefore, both authors have a first-hand knowledge of the subject. The manner of presentation is different but a little too "sugary." Most of the chapter titles are based on puns, but perhaps this makes the chapters more interesting. The information given in the book is factual and sufficient. Knowledge of the contents of the book will greatly enhance the teamwork which is essential between physician and expectant mother.

In the discussion of the urine tests of pregnancy the authors could have mentioned the names of Aschheim and Zondek, because many lay people are familiar with this test and the originators. On page 62 the authors say, "The uterus has been practicing for this big moment"—referring to the actual delivery of the baby. This is not so, because the contractions of the womb which are present throughout pregnancy serve to maintain the proper blood supply and nourishment for the womb and the baby. On page 68 the authors say, "It no longer matters whether head or feet come first." Statistics, even modern ones, show that babies born feet first have a distinctly higher death rate and

are likely to suffer injuries more often. This reviewer shuddered a bit at the word "tools" when the writers referred to obstetric forceps. Physicians are not plumbers or carpenters!

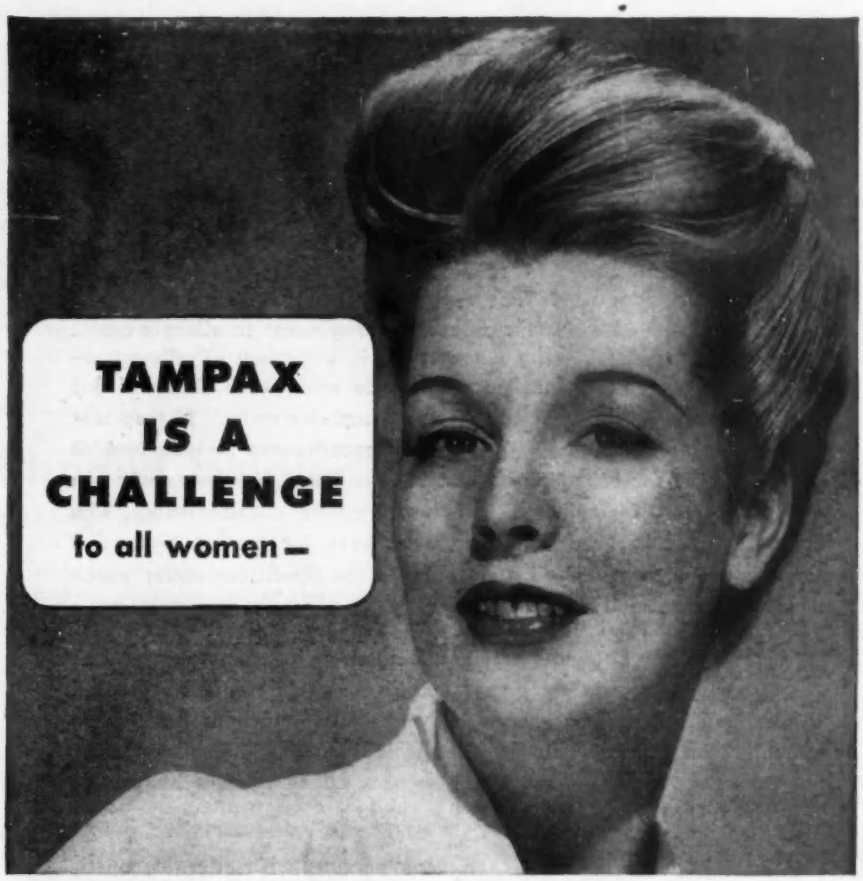
In spite of these minor criticisms the book is well written, easy to read and beautifully illustrated, and the reviewer highly recommends it. Every pregnant woman who reads the book will obtain a vast amount of useful and necessary information.

J. P. GREENHILL, M.D.

The Problem of Changing Food Habits

Report of the Committee on Food Habits, National Research Council, 1941-1943, Bulletin 108. Paper. Pp. 171. Washington: National Research Council, 1943.

This booklet contains the record of the development of the Committee on Food Habits and the essentials of the information gathered as a result of its research activities in the many fields which bear on a problem of this nature. As part of the attack on the tremendous problem of national nutrition which faced this country even before war began, this group was organized to assist governmental authorities to determine wherein lay the weaknesses of the national dietary and how these weaknesses could best be corrected. Cultural as well as scientific problems were involved. Field studies were made to determine the characteristic food pattern of samples of various population groups, with the realization that a group with one racial background has vastly different food traits than other groups with different racial heritage. Then, further, the types of meals served to families as a whole and to individuals within a family were subjected to study. It was demonstrated by experiment that a change in dietary could be brought about much more effectively when a group decided to make such a change than when the group was requested to do so. In general, it was found that changes in food habits can be brought about in a relatively short time. From observations made as a part of this work, it is recorded that it is much more difficult to change the dietary habits of obese persons than the habits of those with other dietary problems. In addition, studies were made of the potentialities of swaying group food habits by various technics. Here it was found that desirable results are attained more readily from efforts confined to contact through preexisting organizations than through any new alignment such as the neighborhood block group. The eating habits of such groups as shift workers, governmental office workers and racial



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classes were studied. Attitudes of the people of this country toward food rationing were sounded out with a series of carefully chosen questions, but essentially none of the information gathered in the study is found in this report. The trend of the discussions at the Committee meetings is presented to indicate the varied angles from which the problem of changing food habits was approached, with food marketing experts, educators, physicians with various specialty interests and government administrators of this country and its allies participating in the discussions. The results of the broad scope of these field studies and the numerous planned discussions should prove of material assistance in devising plans to insure the most effective utilization of this country's food supplies.

GEORGE K. ANDERSON, M.D.

Punch In, Susie!

By Nell Giles. Cloth. Price, $1.50. Pp. 143. New York: Harper & Brothers, 1944.

A feature writer for the Boston *Globe,* Miss Giles took a job in a war plant and wrote daily articles for her newspaper describing what she did, saw, heard and learned as she worked on different shifts in various departments of the plant. Presented here in book form, the articles give the non-factory working reader all the sights, sounds and smells of the factory. To the reader on the inside, however, they may give nothing but a pain in the neck, for though Miss Giles learned to like and, apparently, get along with her fellow workers, her articles are never quite free of *noblesse oblige.* She tries to conceal it, but her astonishment when she reports conversations with the girls whose lunches and lockers she shares is almost as transparent as it would have been if she'd said frankly, "Why, these peasants are *people!*" Her professed purpose was to "write the glamor out of women at war," but if this were factory life with its glamor down we wouldn't need to have unions. And we do—ask a factory worker!

R. M. CUNNINGHAM JR.

NOTICE

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Froben Press, 4 St. Luke's Place, New York City.
Harper & Brothers, 49 E. 33rd St., New York City.
The Macmillan Company, 60 Fifth Ave., New York City.
National Research Council, National Academy of Sciences, Washington, D. C.

Protect Young Eyes!

(Continued from page 255)

the use of special eye drops, by bandaging at the proper times, or by other means, he is taught to focus with the weakened eye. In an infant under 2 years of age, full vision may be restored in a few days or weeks. In a 3 to 6 year old, it may take months. In an 8 year old or an older child, if anything can be done, it will take one to two years; generally at this age it is impossible to restore sight completely.

The important thing is to recognize the danger early and go immediately to a competent eye doctor, giving him an opportunity to restore the child's vision by whatever method he deems appropriate. Your family doctor will gladly recommend a well trained ophthalmologist.

Help for the Blinded Soldier

(Continued from page 260)

Sir Ian said, "We shall place them as honored guests and do as much as we can for them." Already two Americans have been guests at St. Dunstan's.

England has also made provision for those who have lost their sight as a result of air raids. A program for blinded civilians, under the direction of the National Institute for the Blind, has opened three centers called Houses of Recovery. These are not hospitals but homes where, in an atmosphere of healthy encouragement, persons are helped to recover from the shock of loss of sight.

One of the encouraging aspects of loss of sight in the present war, according to the experience of the English, is the large number who are able to save some vision. Of 288 service and civilian casualties known to St. Dunstan's, 88 have, through surgical care, recovered some useful vision. In a recent interview, Sir Ian Fraser compared the eye casualties of the two wars. During World War I, he said, two thirds of those blinded in action were wounded by high explosive shells. In nearly all such cases the eyes were penetrated by metal fragments. In this war, more have been blinded by concussion, causing changes in the eye, collapse or irreparable damage from hemorrhage. With less damage to sinuses, the surgery used has become more plastic in character. The tendency of modern weapons, including aerial bombs, is to increase the high explosive and decrease the metal until it serves merely as a container. Since much of the metal is nonferrous, the electromagnet has become less important than formerly.

Reports from army hospitals in this country, based on the present small number of blind patients, also denote a change in the circumstances of blindness. Most of the loss of sight so far is the result of the explosion of land mines and booby traps both in camps in this country and in the theaters of war, and because of this the lost sight is relatively a secondary but unfortunately a permanent disability. The explosions carry away portions of the face as well as the eyes and cause other damage to the body. Modern plastic surgery can perform miracles in repairing the damage to faces, but even when a perfect plastic restoration has been done, sight cannot be restored. This situation has also changed the approach to the retraining program. Because prolonged surgical treatment is necessary, it no longer seems wise to wait for its completion before beginning retraining.

In planning for a program for retraining blinded service men, this country was not as fortunate as England, in that we had no continuation of the last war program. U. S. Army General Hospital No. 7, generally known as Evergreen, opened in November 1917 on the estate of Mrs. T. Harrison Garrett in Guilford near Baltimore, Md., as the center for the care of blinded service men in the first World War, was closed in 1922. When it became apparent that a new program would be needed for the retraining of blinded service men and women and also for those who might be disabled in civilian defense, it was necessary to go before the Congress for legislation to authorize such action. The original intent of this legislation was to provide a single rehabilitation service which would cover all forms of disability, including members of the armed forces and those who were disabled in civilian defense and war industries. After citing the contribution that the physically handicapped could

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make to the war effort through rehabilitation, a message of the President to the 77th Congress stated: "In order to secure the most effective utilization of the capabilities of the physically handicapped, it is important that a single rehabilitation service be established for both veterans and civilians."

On the basis of this recommendation bills were introduced into the 77th Congress by Representative Barden of South Carolina and Senator LaFollette of Wisconsin, calling for a comprehensive program of rehabilitation which included provision for the blind both in the armed services and civilian life. No action was taken on this legislation in the 77th Congress, and similar bills were introduced into the 78th Congress. Representatives of the veterans organizations, however, were not willing to go along with this unified program, and with their support a bill was introduced into the Senate by Senator Walsh and into the House by Representative Rankin providing a separate program for service men and women to be set up by the Veterans Administration. This was passed and signed by the President on March 24, 1943. Under the authority of this act, the head of Veterans' Administration appointed Maurice I. Tynan, formerly associated with the United States Office of Education, Office of Services for the Blind, to set up a program for the retraining and rehabilitation of men and women in the armed services who lose their sight. Visually handicapped himself, Mr. Tynan was in charge of the training center at Evergreen at the time of its closing in 1922.

Preparation of the program for the retraining and rehabilitation of service men apart from civilians may have some merit beyond the attitude of the veterans' organizations that they represent a class apart. But there is grave danger that under the direction of this department there may not be sufficient motivation to overcome contentment with the hospital and domiciliary care which the Veterans' Administration can give and the security which an assured pension for life provides to the disabled. Another difficulty of relying on this legislative provision is that the retraining of most service men should not wait until there is a formal change of status from that of soldier or sailor to that of veteran. As we have indicated earlier, the physical needs of disabled men in this war require long surgical treatment, and the immediate introduction of a retraining program is imperative. It is because of these aspects of the problem that the plan for the Army to undertake social adjustment along with surgical care commends itself to those experienced in dealing with the blind. In the meantime, most of the men who have lost their sight in this war are still in the service, and a recent order will keep them there until the new center is established.

Leading in the effort for a fully coordinated program is Maj. Walter E. Barton, attached to the Office of the Surgeon General in charge of reconditioning. Major Barton is introducing programs to recondition men for service into all army hospitals covering all disabilities. He is showing an understanding attitude toward the blind which is greatly appreciated by workers in that field. He knows that time is of the essence in these matters and that it is important when a person has lost his sight to give early assurance that life in a darkened world can be worth while. Early discouragement frustrates later efforts toward retraining.

ARMY HOSPITAL PROGRAM

Already several steps have been taken by the Office of the Surgeon General to alleviate the trying situations arising when sight has gone. To provide an early approach to men in army hospitals, several blind men have been permitted to visit blinded patients to provide the encouragement which persons who have lived successfully in the dark are better able to give than seeing people. Two young men, both of whom lost their sight while in the Army, have been assigned to contact blinded service men at the earliest possible moment. Lt. John R. Millon, who lost his sight prior to the war but while in the Army, has been assigned to the Letterman General Hospital in San Francisco to cover the West Coast; while Lt. John C. Frey, who lost his sight since this war began, is to be stationed at the Valley Forge General Hospital at Phoenixville, Pa., to cover the East Coast. These are steps in the right direction, but these early contacts must be followed by the full program of adjustment and retraining which is so essential.

Many of the men now in hospitals have reached the point where a more definite program is needed, and it is the hope of the authorities in Washington that with the recent order to establish the new center for social adjustment, this training will be available without further delay. While the location for the new center has not yet been definitely determined, it has been suggested that the vicinity of the Valley Forge Hospital, about 30 miles outside of Philadelphia, would be most suitable, because some 25 blinded men

have already been assembled at that hospital and a program of plastic surgery has been set up there. It is also convenient to a large navy hospital. The new center, wherever it may be, must be fully equipped for this service and intelligently staffed with people who have had experience in handling the blind. There should be several blind persons on the staff. Its primary purpose should be to teach those who have lost their sight to live in a darkened world and to prepare them to want to be retrained either for return to their old jobs or in new skills where loss of sight is not too great a handicap. It is in the development of this program that many feel America may well follow the example and leadership of St. Dunstan's in England.

There are a number of difficult problems in laying out such a program, but the experience of schools for the blind which have been functioning successfully for over a hundred years in this country can contribute largely to their solution and should not be overlooked. It is not simply a program of rehabilitation which is needed but one which will assist in placement and provide after care to help the blind person keep contented and happy throughout his life. One of the weaknesses of the legislation passed by the last Congress is that it does not authorize a program of after care. As the Veterans' Administration program must terminate six years after the war, this is a mistake which should certainly be rectified. Eugene Brieux said of those blinded in the last war, "To some wounded soldiers our responsibility is over when their wounds are healed, but for the blind it only begins . . . they need to be prepared for their new life."

The new life of a blinded person has many interesting aspects which can be presented in a practical but encouraging way. Let me give two illustrations. First, the fingers become the eyes of the blind. The sense of touch in the fingers must be developed to read the dots of the braille system, which is the medium of reading for all blind people. It must also be trained to understand the shapes and textures of objects in order to provide the information which the eyes cannot now give. Secondly, the horizon of a blind person is the reach of the arms. In order that the blind may understand and comprehend any unfamiliar object it must be brought within the reach of his hands.

In planning the program for this country, one thing should be different from the English plan. St. Dunstan's is a private organization maintained through appeals to the public and through funds left by philanthropists. In this country it is the will of the people that such work as the retraining of blinded soldiers and sailors be a public responsibility. As these men have given this valuable faculty for the defense of their country, they have the right to expect the country to do everything possible for their restoration to normal life. On this point there can be no question, as the legislation passed provides for adequate and complete support of a program for the war blinded by the federal government. This has an added value in that it should eliminate appeals for support by various organizations on the grounds that they help the war blinded. There is no need for such appeals in this country, and when they are presented it should be remembered that the federal government is authorized by the Congress to pay all the expenses for retraining its disabled soldiers and sailors.

The outstanding need in a program for the war blinded is a cheerful approach to their retraining. Many blind people will testify that life in a darkened world need not be cheerless. Schools for the blind are notably happy places. "Blindness should be looked upon," writes Morris Frank, "as an inconvenience only, a handicap that can be overcome. A blind person must realize that he will have to adjust himself to living in the world of which he is a part, and it will not adapt itself to him. There is no world of blind people into which you can escape. He must be encouraged therefore, to continue to function as a seeing person, seeking his own friends and contacts and, where feasible, continuing the same line of work as before loss of sight. It is the personality and the will to do behind the handicap of blindness that counts." Seeing people, however, also have a responsibility in helping blinded persons to overcome this handicap, and it is not too early to caution people to be prepared to receive those who return from the war maimed and disabled in a manner that will give them encouragement and help. The Surgeon General of the Army recently released some suggestions about the right attitude toward wounded soldiers who return, stating that they should be treated in a friendly way, without sentiment or pity, and they should not be given too much help. Significantly, he stated: "If there is something the patient can do for you, let him do it. If his faith in his ability to do things is restored, the rest of the treatment is easy."

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MEDICAL NEWS OF THE MONTH

Another Benefit from Painless Childbirth Technic

"One of the outstanding benefits to a patient who is delivered under caudal analgesia [the painless childbirth technic announced a year ago] is the prompt termination of the third stage of labor and the amazingly small amount of blood lost," Norris W. Vaux and Robert M. Mitchell of Philadelphia report in a recent article.

The two men point out that it has been said that more women die from accidents of the third stage of labor than during the other two combined. Strictly speaking, the duration of the third stage of labor is from the birth of the child to the birth of the placenta in toto. The placenta is the organ within the womb which establishes communication between the mother and the child by means of the umbilical cord.

Cold Vaccines of No Value

Another study in which it was revealed that cold vaccines are of no value in the prevention of colds is reported by Lemuel C. McGee, Wilmington, Del., J. E. Andes, Morgantown, W. Va., C. A. Plume, Succasunna, N. J., and S. H. Hinton, Parlin, N. J. The study was made among men and women employed by an industry in five geographic locations. The investigators say, "No clearly evident protection against the cold and related acute respiratory infections can be demonstrated in the results of this clinical trial at mass immunization. The indiscriminate use of cold vaccine now available is not the answer to the problem of industrial absenteeism due to acute respiratory infections." These findings confirm those reported from the University of Minnesota in 1938 and 1940 and those obtained in a similar study among military personnel.

Penicillin for Gas Gangrene

A case of gas gangrene has been successfully treated with penicillin after all routine measures, including serums, sulfonamides and amputation, had failed, W. B. McKnight, Richard D. Loewenberg and Virginia L. Wright, Portola, Calif., reported recently. This is believed to be the first instance in which the new drug was used to treat a gas bacillus infection in a human being. The significance of this report is emphasized by the fact that although gas gangrene is a comparatively rare infection in civilian life, it is a serious menace in military operations. The mortality rate was 48.52 per cent among the American troops in France in the last world war.

Virus Pneumonia Not a Disease Entity

As a result of clinical, x-ray and laboratory studies carried out by F. B. Lusk and E. K. Lewis, Chicago, they conclude that atypical pneumonia, sometimes called virus pneumonia, should not be considered a disease entity but part of a syndrome, or group of symptoms, in which the lesions in the lung are but one manifestation of a generalized infection. Their report in a recent issue of *Diseases of the Chest* is based on a study representing a cross section of some 6,000 cases of acute epidemic respiratory tract infection treated in the Station Hospital at Fort Custer, Michigan.

Incidence of Cancer

The prevalence of cancer in the United States is again emphasized in the results of a survey recently made and reported in *Public Health Reports* by Harold F. Dorn of the United States Public Health Service. He says: "It is estimated that there are about 475,000 to 500,000 persons under treatment for cancer at any given time in the United States. About 300,000 new cases of cancer are diagnosed for the first time during each year. In addition to these cases are those which have been treated and cured, as well as those with undiagnosed tumors. The number in the latter two categories is unknown."